DAIKIN

Si01-406

Service Manual

Инструкция по обслуживанию

SPLIT Pair
C-Series

[Applied Models]

- **Non-Inverter Pair : Cooling Only**
- **Non-Inverter Pair : Heat Pump**

Non Inverter Pair C-Series

●Cooling Only

Indoor Unit

FT25CV1A FT35CV1A FT50CV1A FT60CV1A

Outdoor Unit

R25CV1A R35CV1A R50CV1A R60CV1A

●Heat Pump

Indoor Unit

FTY25CVMA FTY35CVMA

Outdoor Unit

RY25CVMA RY35CVMA

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1. Introduction

1.1 Safety Cautions

Cautions and Warnings

- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into "⚠ **Warning**" and "⚠ **Caution**". The "⚠ **Warning**" items are especially important since they can lead to death or serious injury if they are not followed closely. The "⚠ **Caution**" items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms

△ This symbol indicates an item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.

◯ This symbol indicates a prohibited action.
The prohibited item or action is shown inside or near the symbol.

● This symbol indicates an action that must be taken, or an instruction.
The instruction is shown inside or near the symbol.

- After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer.

1.1.1 Caution in Repair

⚠ Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for a repair. Working on the equipment that is connected to a power supply can cause an electrical shook. If it is necessary to supply power to the equipment to conduct the repair or inspecting the circuits, do not touch any electrically charged sections of the equipment.	
If the refrigerant gas discharges during the repair work, do not touch the discharging refrigerant gas. The refrigerant gas can cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, release the refrigerant gas completely at a well-ventilated place first. If there is a gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it can cause injury.	
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas can generate toxic gases when it contacts flames.	
The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Be sure to discharge the capacitor completely before conducting repair work. A charged capacitor can cause an electrical shock.	
Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment can cause an electrical shock or fire.	

Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands can cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water can cause an electrical shock.	
Be sure to provide the grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.	
Be sure to turn off the power switch and unplug the power cable when cleaning the equipment. The internal fan rotates at a high speed, and cause injury.	
Do not tilt the unit when removing it. The water inside the unit can spill and wet the furniture and floor.	
Be sure to check that the refrigerating cycle section has cooled down sufficiently before conducting repair work. Working on the unit when the refrigerating cycle section is hot can cause burns.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room can cause oxygen deficiency.	

1.1.2 Cautions Regarding Products after Repair

Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	

Warning	
Be sure to use the specified cable to connect between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections can cause excessive heat generation or fire.	
When connecting the cable between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	
Do not mix air or gas other than the specified refrigerant (R410A / R22) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If a combustible gas leaks and remains around the unit, it can cause a fire.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor.	For integral units only

1.1.3 Inspection after Repair

Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet all the way. If the plug has dust or loose connection, it can cause an electrical shock or fire.	
If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires can cause an electrical shock, excessive heat generation or fire.	

Warning	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it can cause an electrical shock, excessive heat generation or fire.	

Caution	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 Mohm or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

1.1.4 Using Icons

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

1.1.5 Using Icons List

Icon	Type of Information	Description
Note:	Note	A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
Caution	Caution	A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart (part of) a procedure.
Warning	Warning	A “warning” is used when there is danger of personal injury.
	Reference	A “reference” guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

Part 1
List of Function

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1. Functions

Category	Functions	FT25·35CV1A R25·35CV1A	FT50·60CV1A R50·60CV1A	Category	Functions	FT25·35CV1A R25·35CV1A	FT50·60CV1A R50·60CV1A
Basic Function	Inverter (with Inverter Power Control)	—	—	Health & Clean	Air Purifying Filter with Bacteriostatic, Virustatic Functions	—	—
	Operation Limit for Cooling (°CDB)	19.4 ~46	19.4 ~46		Photocatalytic Deodorizing Filter	—	—
	Operation Limit for Heating (°CWB)	—	—		Air Purifying Filter with Photocatalytic Deodorizing Function	○	○
	PAM Control	—	—		Titanium Apatite Photocatalytic Air-Purifying Filter	—	—
Compressor	Oval Scroll Compressor	—	—		Mold Proof Air Filter	○	○
	Swing Compressor	—	—		Wipe-clean Flat Panel	○	○
	Rotary Compressor	○	○		Washable Grille	—	—
	Reluctance DC Motor	—	—		Filter Cleaning Indicator	—	—
Comfortable Airflow	Power-Airflow Flap	—	—		Good-Sleep Cooling Operation	—	—
	Power-Airflow Dual Flaps	○	○	Timer	24-Hour On/Off Timer	○	○
	Power-Airflow Diffuser	—	—		Night Set Mode	○	○
	Wide-Angle Louvers	○	○	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	○
	Vertical Auto-Swing (Up and Down)	○	○		Self-Diagnosis (Digital, LED) Display	○★	○★
	Horizontal Auto-Swing (Right and Left)	—	—		Wiring Error Check	—	—
	3-D Airflow	—	—		Anticorrosion Treatment of Outdoor Heat Exchanger	○	○
	Comfort Airflow Mode	—	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	—	—
	3-Step Airflow (H/P Only)	—	—		Flexible Voltage Correspondence	—	—
Comfort Control	Auto Fan Speed	○	○		High Ceiling Application	—	—
	Indoor Unit Silent Operation	—	—		Chargeless	10m	10m
	Night Quiet Mode (Automatic)	—	—		Either Side Drain (Right or Left)	○	○
	Outdoor Unit Silent Operation (Manual)	—	—		Power Selection	—	—
	Intelligent Eye	—	—	Remote Control	5-Rooms Centralized Controller (Option)	○	○
	Quick Warming Function	—	—		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	○	○
	Hot-Start Function	—	—		Remote Control Adaptor (Normal Open Contact) (Option)	○	○
	Automatic Defrosting	—	—		DIII-NET Compatible (Adaptor)(Option)	—	—
Operation	Automatic Operation	—	—	Remote Controller	Wireless	○	○
	Programme Dry Function	○	○		Wired	—	—
	Fan Only	○	○				
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	○	○				
	Inverter Powerful Operation	—	—				
	Priority-Room Setting	—	—				
	Cooling / Heating Mode Lock	—	—				
	Home Leave Operation	—	—				
	Indoor Unit On/Off Switch	○	○				
	Signal Reception Indicator	○	○				
	Temperature Display	—	—				
	Another Room Operation	—	—				

Note: ○ : Holding Functions ★ : Digital Only
— : No Functions

Category	Functions	FTY25·35CVMA RY25·35CVMA	Category	Functions	FTY25·35CVMA RY25·35CVMA
Basic Function	Inverter (with Inverter Power Control)	—	Health & Clean	Air Purifying Filter with Bacteriostatic, Virustatic Functions	—
	Operation Limit for Cooling (°CDB)	10 ~46		Photocatalytic Deodorizing Filter	—
	Operation Limit for Heating (°CWB)	–10 ~20		Air Purifying Filter with Photocatalytic Deodorizing Function	○
	PAM Control	—		Titanium Apatite Photocatalytic Air-Purifying Filter	—
Compressor	Oval Scroll Compressor	—		Mold Proof Air Filter	○
	Swing Compressor	—		Wipe-clean Flat Panel	○
	Rotary Compressor	○		Washable Grille	—
	Reluctance DC Motor	—		Filter Cleaning Indicator	—
Comfortable Airflow	Power-Airflow Flap	—		Good-Sleep Cooling Operation	—
	Power-Airflow Dual Flaps	○	Timer	24-Hour On/Off Timer	○
	Power-Airflow Diffuser	—		Night Set Mode	○
	Wide-Angle Louvers	○	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○
	Vertical Auto-Swing (Up and Down)	○		Self-Diagnosis (Digital, LED) Display	○ ★
	Horizontal Auto-Swing (Right and Left)	—		Wiring Error Check	—
	3-D Airflow	—		Anticorrosion Treatment of Outdoor Heat Exchanger	○
	Comfort Airflow Mode	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	—
	3-Step Airflow (H/P Only)	—		Flexible Voltage Correspondence	○
Comfort Control	Auto Fan Speed	○		High Ceiling Application	—
	Indoor Unit Silent Operation	—		Chargeless	10m
	Night Quiet Mode (Automatic)	—		Either Side Drain (Right or Left)	○
	Outdoor Unit Silent Operation (Manual)	—		Power Selection	—
	Intelligent Eye	—	Remote Control	5-Rooms Centralized Controller (Option)	○
	Quick Warming Function	○		Remote Control Adaptor (Normal Open-Pulse Contact)(Option)	○
	Hot-Start Function	○		Remote Control Adaptor (Normal Open Contact)(Option)	○
	Automatic Defrosting	○		DIII-NET Compatible (Adaptor)(Option)	—
Operation	Automatic Operation	○	Remote Controller	Wireless	○
	Programme Dry Function	○		Wired	—
	Fan Only	○			
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	○			
	Inverter Powerful Operation	—			
	Priority-Room Setting	—			
	Cooling / Heating Mode Lock	—			
	Home Leave Operation	—			
	Indoor Unit On/Off Switch	○			
	Signal Reception Indicator	○			
	Temperature Display	—			
	Another Room Operation	—			

Note: ○ : Holding Functions ★ : Digital Only
— : No Functions

Part 2
Specifications

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1. Specifications

220-230-240V 50Hz

Model	Indoor Units		FT25CV1A	FT35CV1A
	Outdoor Units		R25CV1A	R35CV1A
Capacity		kW	2.64	3.52
		Btu/h	9,000	12,000
		kcal/h	2,270	3,000
Moisture Removal		L/h	1.2	1.9
Running Current		A	3.95-4.00-4.10	5.58-5.60-5.62
Power Consumption		W	817-843-868	1,135-1,170-1,200
Power Factor		%	94.0-91.6-88.2	92.5-90.8-89.0
COP		W/W	3.23-3.13-3.04	3.10-3.01-2.93
Piping Connections	Liquid	mm	ϕ 6.4	ϕ 6.4
	Gas	mm	ϕ 9.5	ϕ12.7
	Drain	mm	ϕ18.0	ϕ18.0
Heat Insulation			Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Indoor Unit			**FT25CV1A**	**FT35CV1A**
Front Panel Color			White	White
Air Flow Rate	m³/min (cfm)	H	8.3 (291)	8.4 (297)
		M	6.7 (235)	7.0 (247)
		L	5.0 (176)	5.5 (194)
Fan	Type		Cross Flow Fan	Cross Flow Fan
	Motor Output	W	18	18
	Speed	Steps	5 Steps and Auto	5 Steps and Auto
Air Direction Control			Right, Left, Horizontal and Downward	Right, Left, Horizontal and Downward
Air Filter			Removable/Washable/Mildew Proof	Removable/Washable/Mildew Proof
Running Current		A	0.22-0.22-0.23	0.22-0.22-0.23
Power Consumption		W	45-47-51	45-47-51
Power Factor		%	93.0-92.9-92.3	93.0-92.9-92.3
Temperature Control			Microcomputer Control	Microcomputer Control
Dimensions (H×W×D)		mm	273×784×195	273×784×195
Packaged Dimensions (H×W×D)		mm	258×834×325	258×834×325
Weight		kg	8	8
Gross Weight		kg	11	11
Operation Sound	H/M/L	dBA	38/34/28	39/35/31
Outdoor Unit			**R25CV1A**	**R35CV1A**
Casing Color			Ivory White	Ivory White
Compressor	Type		Hermetically Sealed Rotary Type	Hermetically Sealed Rotary Type
	Model		RC30BV1R2T	RC46AV1TRT
	Motor Output	W	700	1,100
Refrigerant Oil	Type		SUNISO 4GSD. I.	SUNISO 4GSD. I.
	Charge	L	0.40	0.50
Refrigerant	Type		R22	R22
	Charge	kg	0.76	0.95
Air Flow Rate	m³/min (cfm)	H	28-29-30 (988-1,024-1,059)	26.5-27-28 (935-953-988)
		L	— (—)	— (—)
Fan	Type		Propeller	Propeller
	Motor Output	W	25	25
Running Current		A	3.73-3.78-3.87	5.36-5.38-5.39
Power Consumption		W	772-796-817	1,090-1,123-1,149
Power Factor		%	94.1-91.6-88.0	92.4-90.8-88.8
Starting Current		A	19-20-21	26-27-28
Dimensions (H×W×D)		mm	560×695×265	560×695×265
Packaged Dimensions (H×W×D)		mm	599×797×310	599×797×310
Weight		kg	27	33
Gross Weight		kg	30	35
Operation Sound		dBA	46-47-48	48-48-49
Drawing No.			3D045880	3D045881A

Notes:

- MAX. interunit piping length: 25m
- MAX. interunit height difference: 15m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shown in the table below.

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

Standard	Cooling	Piping Length
JIS C 9612	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	5m

- The data on the conditions (AS/NZS3823.1):

(Rated)		FT25CV1A	FT35CV1A
Capacity	kW	2.49	3.32
Running Current	A	4.28	5.41
Power Consumption	W	900	1,200
COP	W/W	2.77	2.77

(Conditions)

Standard	Cooling	Piping Length	Power Supply
AS/NZS3823.1	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	7.5m	50Hz 230V

220-230-240V 50Hz

Models	Indoor Units		FT50CV1A	FT60CV1A
	Outdoor Units		R50CV1A	R60CV1A
Capacity		kW	5.3	6.6
		Btu/h	18,100	22,500
		kcal/h	4,560	5,680
Moisture Removal		L/h	2.9	5.2
Running Current		A	7.4-7.3-7.2	11.0-10.9-10.8
Power Consumption		W	1,600	2,390
Power Factor		%	98.3-95.3-92.6	98.8-95.3-92.2
COP		W/W	3.31	2.76
Piping Connections	Liquid	mm	ϕ 6.4	ϕ 6.4
	Gas	mm	ϕ15.9	ϕ15.9
	Drain	mm	ϕ18.0	ϕ18.0
Heat Insulation			Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Indoor Units			**FT50CV1A**	**FT60CV1A**
Front Panel Color			White	White
Air Flow Rate	m³/min (cfm)	H	16.2 (572)	17.5 (618)
		M	14.0 (494)	15.0 (530)
		L	11.9 (420)	12.5 (441)
Fan	Type		Cross Flow Fan	Cross Flow Fan
	Motor Output	W	43	43
	Speed	Steps	5 Steps and Auto	5 Steps and Auto
Air Direction Control			Right, Left, Horizontal and Downward	Right, Left, Horizontal and Downward
Air Filter			Removable/Washable/Mildew Proof	Removable/Washable/Mildew Proof
Running Current		A	0.19-0.18-0.17	0.21-0.20-0.19
Power Consumption		W	40	45
Power Factor		%	95.7-96.6-98.0	97.4-97.8-98.7
Temperature Control			Microcomputer Control	Microcomputer Control
Dimensions (HxWxD)		mm	290×1,050×238	290×1,050×238
Packaged Dimensions (HxWxD)		mm	337×1,147×366	337×1,147×366
Weight		kg	12	12
Gross Weight		kg	17	17
Operation Sound	H/M/L	dBA	43/39/35	46/41/36
Outdoor Units			**R50CV1A**	**R60CV1A**
Casing Color			Ivory White	Ivory White
Compressor	Type		Hermetically Sealed Rotary Type	Hermetically Sealed Rotary Type
	Model		RC60V1TNRT	NH41VMDT
	Motor Output	W	1,500	2,200
Refrigerant Oil	Type		SUNISO 4GSD. I.	MS-32
	Charge	L	0.85	1.20
Refrigerant	Type		R22	R22
	Charge	kg	1.35	1.70
Air Flow Rate	m³/min (cfm)	H	29-29.5-30 (1,024-1,041-1,059)	40-40.5-41 (1,412-1,430-1,447)
		L	— (—)	23-24-25 (812-847-883)
Fan	Type		Propeller	Propeller
	Motor Output	W	53	53
Running Current		A	7.21-7.12-7.03	10.79-10.70-10.61
Power Consumption		W	1,560	2,345
Power Factor		%	98.3-95.3-92.5	98.8-95.3-92.1
Starting Current		A	32-33.5-35	55-58-60
Dimensions (HxWxD)		mm	685×800×300	685×800×300
Packaged Dimensions (HxWxD)		mm	732×955×390	732×955×390
Weight		kg	49	61
Gross Weight		kg	54	66
Operation Sound		dBA	54-54-55	54-54-55
Drawing No.			3D045882	3D045883A

Notes:

- MAX. interunit piping length: 30m
- MAX. interunit height difference: 15m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shown in the table below.

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

Standard	Cooling	Piping Length
JIS C 9612	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	5m

- The data on the conditions (AS/NZS3823.1):

(Rated)		FT50CV1A	FT60CV1A
Capacity	kW	5.3	6.6
Running Current	A	7.6	11.3
Power Consumption	W	1,650	2,460
COP	W/W	3.21	2.68

(Conditions)

Standard	Cooling	Piping Length	Power Supply
AS/NZS3823.1	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	7.5m	50Hz 230V

220-230-240V 50Hz

Models	**Indoor Units**		**FTY25CVMA**		**FTY35CVMA**	
	Outdoor Units		**RY25CVMA**		**RY35CVMA**	
			Cooling	Heating	Cooling	Heating
Capacity		kW	2.54	3.4	3.60	4.2
		Btu/h	8,700	11,600	12,300	14,300
		kcal/h	2,190	2,920	3,100	3,600
Moisture Removal		L/h	1.2	—	1.9	—
Running Current		A	5.1	5.6	7.4	7.3
Power Consumption		W	900	1,100	1,360	1,340
Power Factor		%	80.2-76.7-73.5	89.3-85.4-81.8	83.5-79.9-76.6	83.4-79.8-76.5
COP		W/W	2.82	3.09	2.65	3.13
Piping Connections	Liquid	mm	ϕ 6.4		ϕ 6.4	
	Gas	mm	ϕ 9.5		ϕ12.7	
	Drain	mm	ϕ18.0		ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Indoor Units			**FTY25CVMA**		**FTY35CVMA**	
Front Panel Color			White		White	
Air Flow Rate	m³/min (cfm)	H	7.8 (275)	8.1 (286)	7.7 (272)	8.1 (286)
		M	6.4 (226)	6.6 (233)	6.3 (222)	6.6 (233)
		L	5.0 (177)	5.1 (180)	4.9 (173)	5.1 (180)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	18		18	
	Speed	Steps	5 Steps and Auto		5 Steps and Auto	
Air Direction Control			Right, Left, Horizontal and Downward		Right, Left, Horizontal and Downward	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current		A	0.17-0.18-0.18	0.17-0.18-0.18	0.17-0.18-0.18	0.17-0.18-0.18
Power Consumption		W	37-40-43	37-40-43	37-40-43	37-40-43
Power Factor		%	98.9-96.6-99.5	98.9-96.6-99.5	98.9-96.6-99.5	98.9-96.6-99.5
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		mm	273×784×195		273×784×195	
Packaged Dimensions (H×W×D)		mm	258×834×325		258×834×325	
Weight		kg	7.5		7.5	
Gross Weight		kg	11		11	
Operation Sound	H/M/L	dBA	37 / 34 / 30	37 / 33 / 30	38 / 35 / 32	38 / 35 / 31
Outdoor Units			**RY25CVMA**		**RY35CVMA**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Rotary Type		Hermetically Sealed Rotary Type	
	Model		RC1X26BTNT		RC1X26BTNT	
	Motor Output	W	750		750	
Refrigerant Oil	Type		SUNISO 4GSD.I.		SUNISO 4GSD.I.	
	Charge	L	0.4		0.4	
Refrigerant	Type		R22		R22	
	Charge	kg	0.72		0.95	
Air Flow Rate	m³/min		28.0-29.0-30.0	25.0-25.5-26.5	26.5-27.5-28.0	22.5-23.5-24.0
	cfm		988-1,024-1,059	883-900-935	935-971-988	794-830-847
Fan	Type		Propeller		Propeller	
	Motor Output	W	25		25	
Running Current		A	4.93-4.92-4.92	5.43-5.42-5.42	7.23-7.22-7.22	7.13-7.12-7.12
Power Consumption		W	863-860-857	1,063-1,060-1,057	1,323-1,320-1,317	1,303-1,300-1,297
Power Factor		%	79.6-76.0-72.6	89.0-85.0-81.3	83.2-79.5-76.0	83.1-79.4-75.9
Starting Current		A	5.6		7.3	
Dimensions (H×W×D)		mm	560×695×265		560×695×265	
Packaged Dimensions (H×W×D)		mm	599×797×310		599×797×310	
Weight		kg	31		32	
Gross Weight		kg	34		36	
Operation Sound		dBA	45-46-47	46-47-48	46-47-48	47-48-49
Drawing No.			3D045884		3D045885	

Notes:

- MAX. interunit piping length: 15m
- MAX. interunit height difference: 15m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shown in the table below.

Standard	Cooling	Heating	Piping Length
JIS C 9612	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	Indoor ; 20°CDB Outdoor ; 7°CDB/6°CWB	5m

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

■ The data on the conditions (AS/NZS3823.1) :

(Rated)		FTY25CVMA		FTY35CVMA	
		Cooling	Heating	Cooling	Heating
Capacity	kW	2.5	3.4	3.5	4.2
Running Current	A	5.1	5.6	7.4	7.3
Power Consumption	W	960	1,090	1,485	1,500
COP	W/W	2.60	3.12	2.36	2.80

(Conditions)

Standard	Cooling	Heating	Piping Length	Power Supply
AS/NZS3823.1	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	Indoor ; 20°CDB Outdoor ; 7°CDB/6°CWB	7.5m	50Hz 230V

Part 3
Printed Circuit Board Connector Wiring Diagram

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1. Printed Circuit Board Connector Wiring Diagram

1.1 FT25/35CV1A

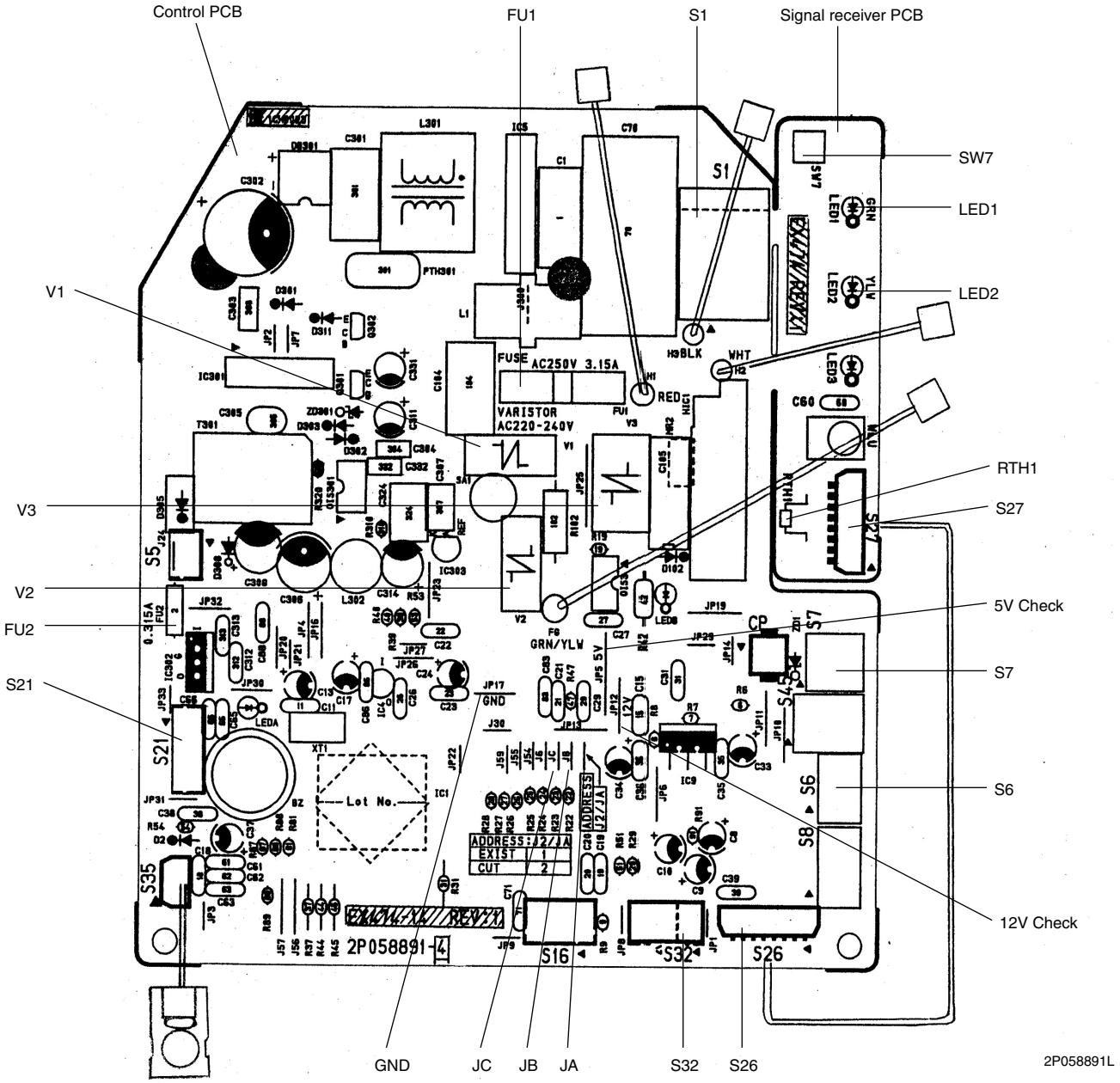
Connectors

1)	S1	Connector for fan motor
2)	S6	Connector for swing motor (horizontal blades)
3)	S7	Connector for fan motor (Hall IC)
4)	S21	Connector for centralized control (HA)
5)	S26	Connector for signal receiver PCB
6)	S27	Connector for control PCB
7)	S32	Connector for heat exchanger thermistor

Note: Other designations

1)	V1, V2, V3	Varistor
2)	JA	Address setting jumper
	JB	Fan speed setting when compressor is OFF on thermostat
	JC	Power failure recovery function
		∗ Refer to page 184 for detail.
3)	SW7	Forced operation ON/OFF switch
4)	LED1	LED for operation (green)
5)	LED2	LED for timer (yellow)
6)	FU1	Fuse (3.15A)
7)	FU2	Fuse (0.315A)
8)	RTH1	Room temperature thermistor

Control PCB
Signal Receiver PCB



1.2 FT50/60CV1A

Connectors

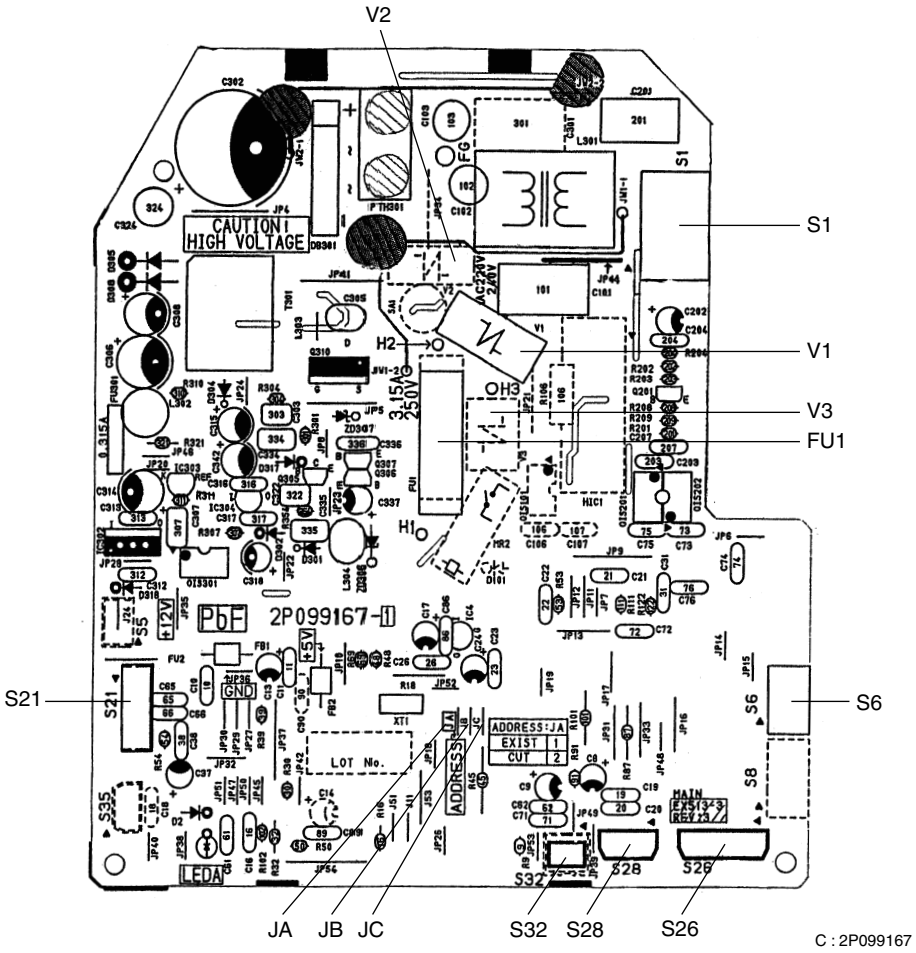
1)	S1	Connector for fan motor
2)	S6	Connector for swing motor (horizontal blades)
3)	S21	Connector for centralized control (HA)
4)	S26, S37	Connector for buzzer PCB
5)	S27, S29	Connector for control PCB
6)	S28	Connector for signal receiver PCB
7)	S32	Connector for heat exchanger thermistor
8)	S38	Connector for display PCB

Note: Other designations

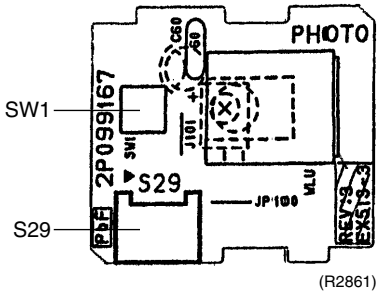
1)	V1, V2, V3	Varistor
2)	JA	Address setting jumper
	JB	Fan speed setting when compressor is OFF on thermostat
	JC	Power failure recovery function
		∗ Refer to page 184 for detail.
3)	SW1	Forced operation ON/OFF switch
4)	LED1	LED for operation (green)
5)	LED2	LED for timer (yellow)
6)	FU1	Fuse (3.15A)
7)	RTH1	Room temperature thermistor

PCB Detail

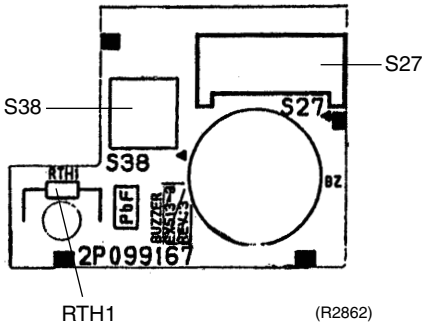
PCB(1): Control PCB



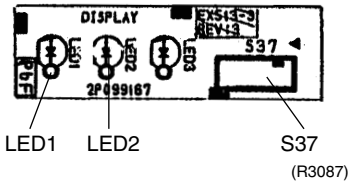
PCB(2): Signal Receiver PCB



PCB(3): Buzzer PCB



PCB(4): Display PCB



1.3 FTY25/35CVMA

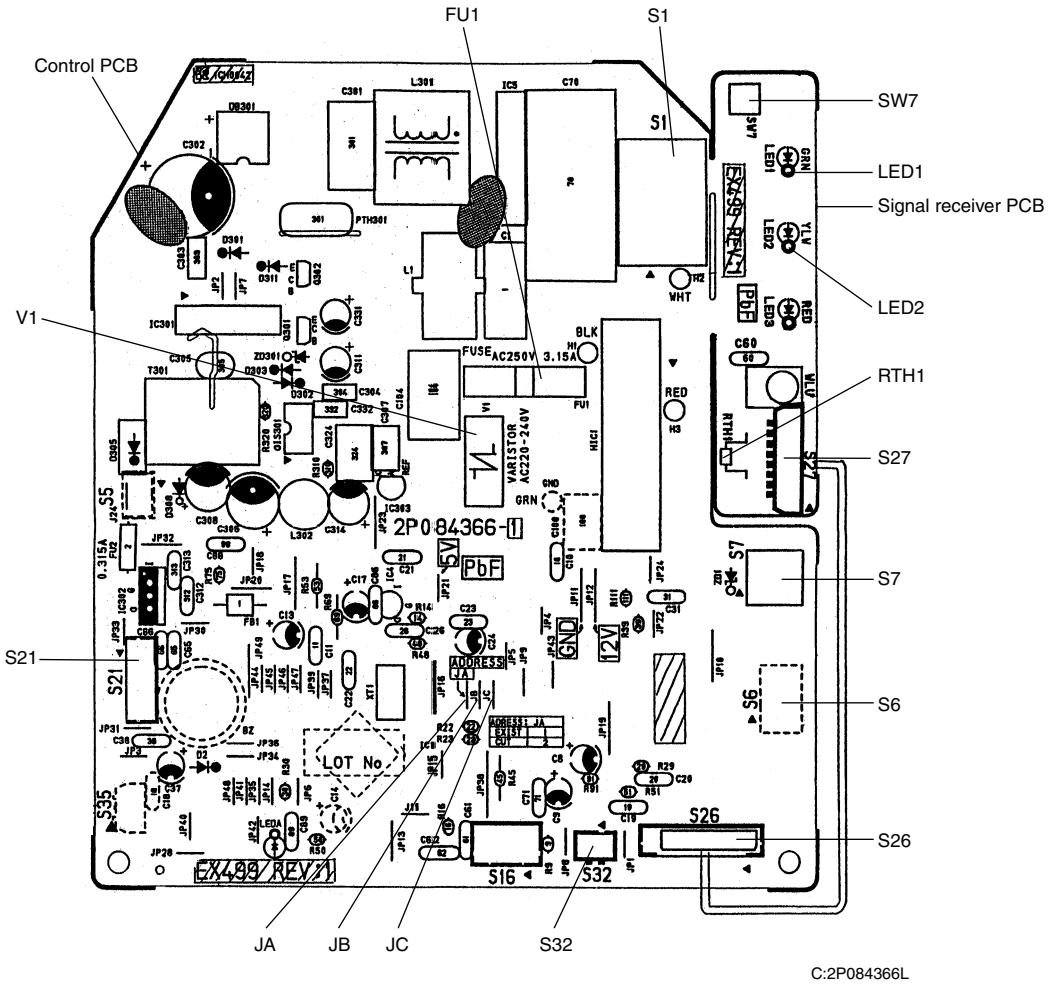
Connectors

1)	S1	Connector for fan motor
2)	S6	Connector for swing motor (horizontal blades)
3)	S7	Connector for fan motor (Hall IC)
4)	S21	Connector for centralized control (HA)
5)	S26	Connector for signal receiver PCB
6)	S27	Connector for control PCB
7)	S32	Connector for heat exchanger thermistor

Note: Other designations

1)	V1	Varistor
2)	JA	Address setting jumper
	JB	Fan speed setting when compressor is OFF on thermostat
	JC	Power failure recovery function
		∗ Refer to page 184 for detail.
3)	SW7	Forced operation ON/OFF switch
4)	LED1	LED for operation (green)
5)	LED2	LED for timer (yellow)
6)	FU1	Fuse (3.15A)
7)	RTH1	Room temperature thermistor

Control PCB
Signal Receiver PCB



1.4 RY25/35CVMA

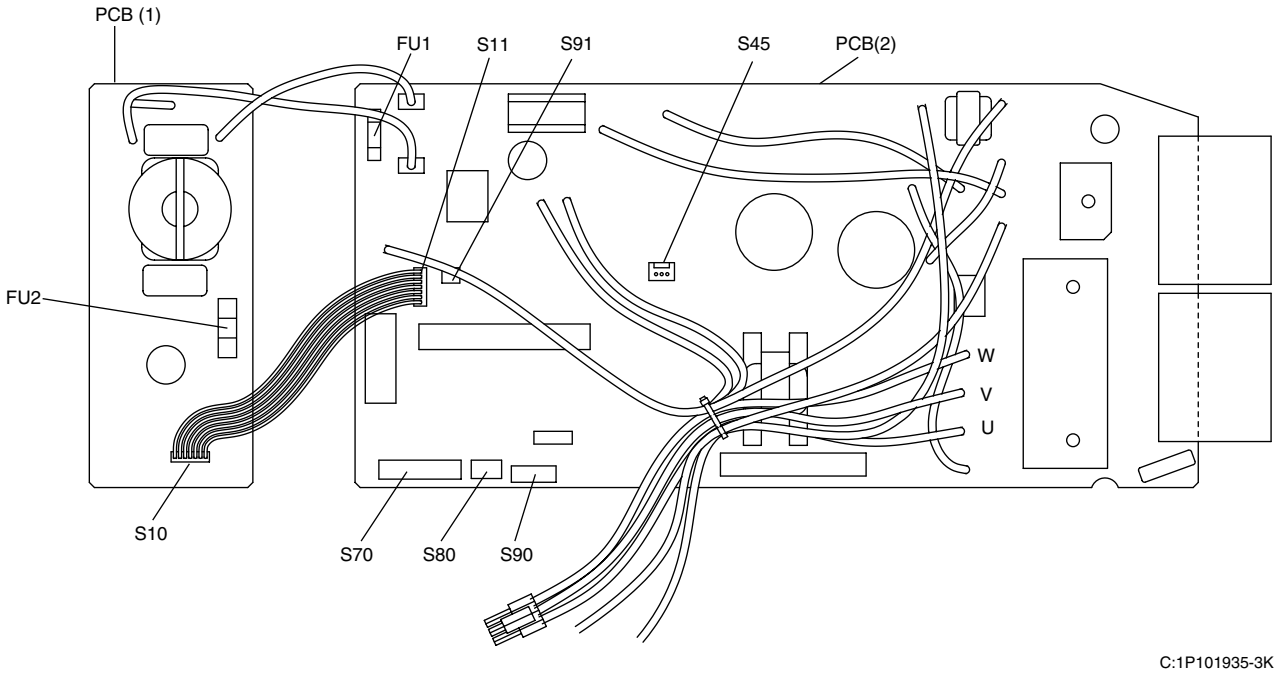
Connectors

1) S10 Connector for PCB (2)
2) S11 Connector for PCB (1) (filter PCB)
3) S45 Connector for terminal board
4) S70 Connector for fan motor
5) S80 Connector for four way valve coil
6) S90 Connector for outdoor temperature thermistor / heat exchanger thermistor
7) S91 Connector for fin thermistor

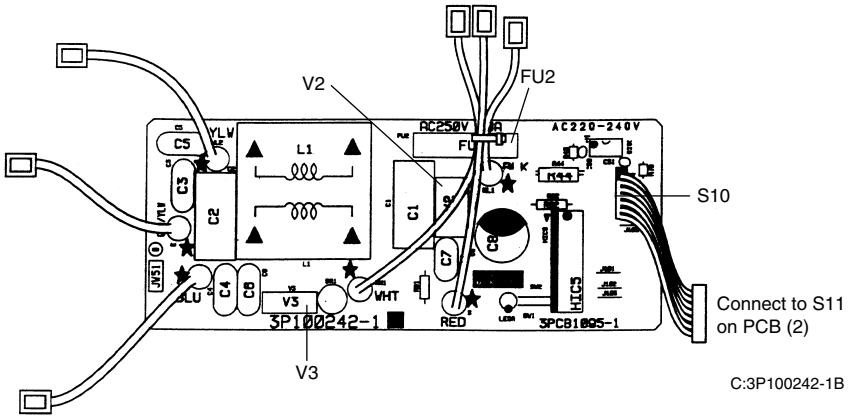
Note: Other designations

1) V1, V2, V3 Varistor
2) FU1 Fuse (3.15A)
3) FU2 Fuse (20A)

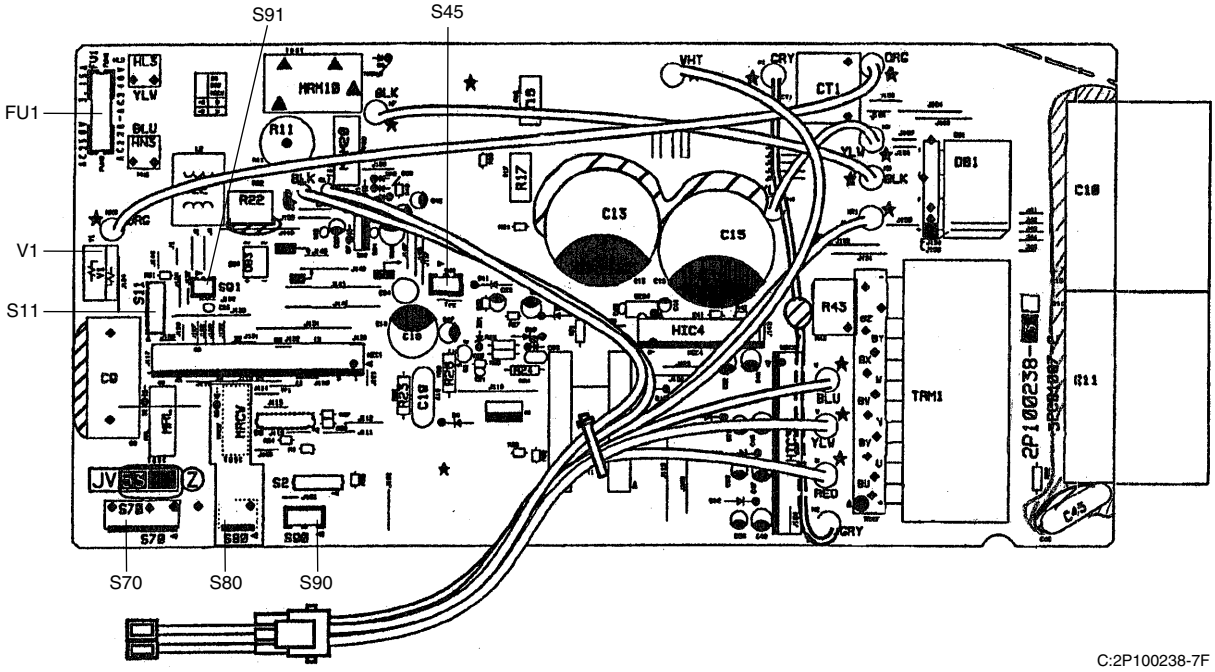
Outline of PCB



Detail of PCB (1)



Detail of PCB (2)



Part 4
Functions and Control

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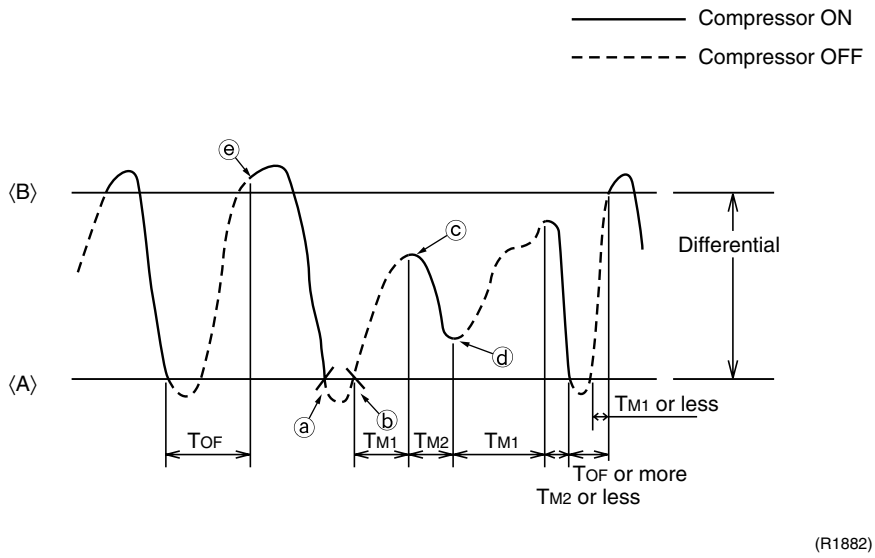
1. Functions of Cooling Only Models

1.1 Cooling Monitoring Function

Monitoring function is activated while cooling and dry operation are suspended.



T_{OF}: Compressor recycling guard timer (3-minute timer)
T_{M1}: 5-minute timer
T_{M2}: 4-minute timer

⟨A⟩ Cooling: temperature set by remote controller
Dry: temperature at suspension
⟨B⟩ Cooling: temperature set by remote controller +1°C
Dry: temperature set by remote controller
Even if the suction temperature remains in the differential range, the compressor repeats ON and OFF.

DETAIL: When the suction temperature rises again to ⟨A⟩ (point b) after the suction temperature is dropped to ⟨A⟩ and the compressor turns OFF (point a), the 5-minute timer starts.
After that, when the suction temperature is within the differential range, even after a lapse of 5 minutes, the compressor is forced to turn ON (point c).
When the suction temperature is still in the differential range, after another 4 minutes of compressor ON, the compressor is forced to turn OFF (point d).
The 5 and 4-minute timers are effective only within the differential temperature range, and when the air suction temperature is reached to ⟨B⟩ or ⟨A⟩ while the timers are counting, timers are reset and the compressor is turned ON or OFF.
(Note, however, that function of placing the compressor in a 3-minute compressor recycling guard timer is provided at point e.)

While the compressor is OFF, the indoor fan operation is controlled by the tap set by remote controller during cooling mode.
In the dry mode, the indoor fan starts operating five seconds after the compression starts, and it stops operating when the compressor shuts down.

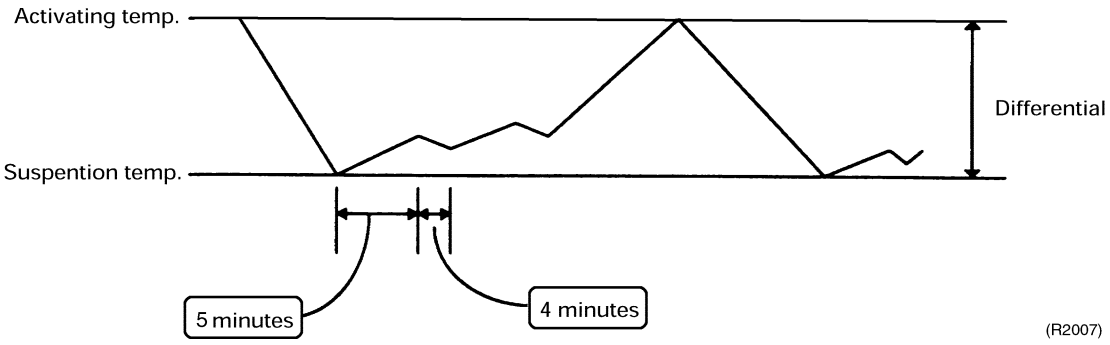
1.2 Programme Dry Function

By the function of the microcomputer, programme dry operation reduces the humidity keeping the temperature in a minimum drop. Room temperature and air flow rate can not be controlled by the adjusting buttons because they are controlled automatically. When the programme dry function starts, dry operation is provided, and then it repeats 6-minute suspension and 4-minute dry operation alternately. When the room temperature rises, it repeats the above process from the beginning.

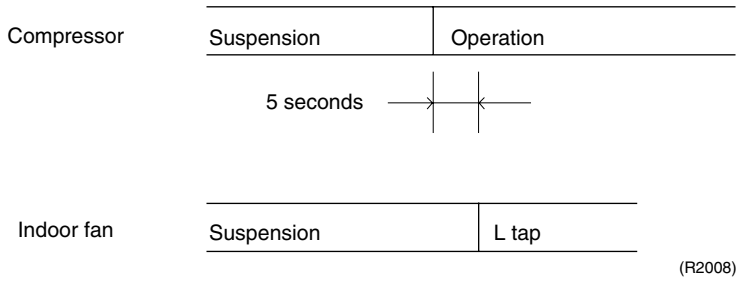
Room temperature at starting of programme dry operation	Program dry activating temperature ∗1	Differential ∗2
Above 24°C	Room temperature at starting of programme dry operation	2.0 deg
18°C ~ 24°C	Room temperature at starting of programme dry operation	1.5 deg
Below 18°C	18°C	1.0 deg

∗1 Dry operation activating (compressor ON) temperature
∗2 Room temperature difference between activation and suspension of dry operation

Programme dry operating condition



Note:
1. The programme dry function is not operated when the room temperature is at 18°C or less.
2. In monitoring operation, fan rotates 5 seconds after the compressor starts its operation.



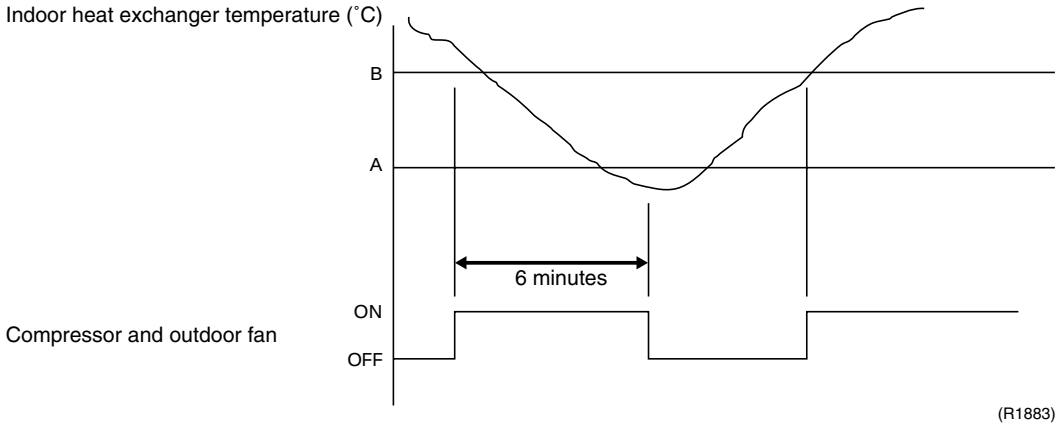
1.3 Freeze-up Protection Control

When the indoor heat exchanger temperature falls below 3°C in cooling or in dry operation,

- the compressor and the outdoor fan are forced to turn OFF.
- the indoor fan rotates at the L tap (in cooling operation) or LL tap (in dry operation).

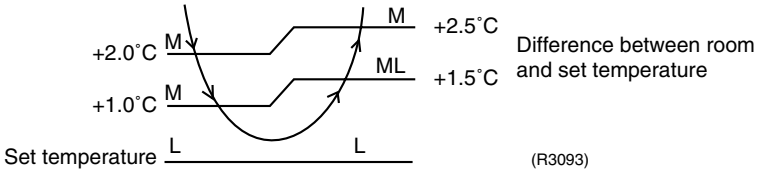
Note that this function is not activated for 6 minutes after compressor turns ON.

When the indoor heat exchanger reaches 13 °C, the compressor and the outdoor fan restart the operations. However, because the compressor recycling guard timer (3-minute timer) takes priority, the compressor and the outdoor fan do not restart the operation during this timer is ON.



1.4 Air Flow Rate Control

In cooling operation, if automatic setting has been selected for air flow rate, the wind flow is determined according to the room temperature and the set temperature.



1.5 Power-Airflow Dual Flaps, Wide-Angle Louvers, and Auto-Swing

Power-airflow Dual Flaps

The large flaps send a large volume of air downwards to the floor. The flap provides an optimum controlled area in cooling and dry mode.

Cooling Mode

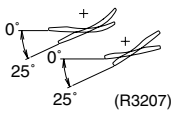
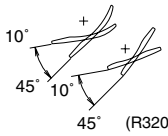
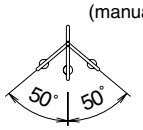
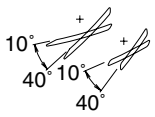
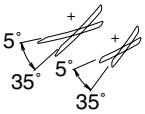
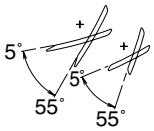
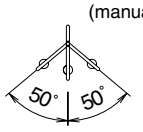
During cooling mode, the flap retracts into the indoor unit. Then, cool air can be blown far and pervaded all over the room.

Wide-Angle Louvres

The louvres, made of elastic synthetic resin, provide a wide range of airflow that guarantees a comfortable air distribution.

Auto-Swing

The following table explains the auto-swing process for cooling, dry and fan :

	Vertical Swing (up and down)			Horizontal Swing (right and left)
	Cooling	Dry	Heating, Fan	
FT25/35CV1A	 (R3207)		 (R3208)	(manual)  (R2817)
FT50/60CV1A	 (R2814)	 (R2815)	 (R2816)	(manual)  (R2817)

1.6 Signal Receiving Sign

When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

1.7 ON / OFF Button on Indoor Unit

The unit can be turned ON by the button on the front panel. This is convenient when the remote controller cannot be found or when the batteries are exhausted.
Press the button again to turn the unit OFF.
The unit runs as follows.

Operation mode	Cool
Air flow rate	Auto
Set temperature	22°C

1.8 Filters

1.8.1 Mold Proof Air Filter

The filter net is treated with mold resisting agent TBZ (harmless, colorless, and odorless). Due to this treatment, the amount of mold growth is much smaller than that of normal filters.

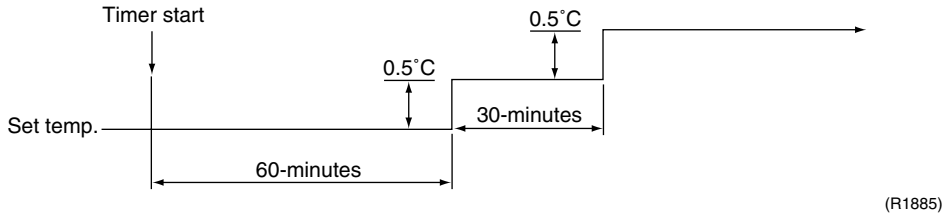
1.8.2 Air Purifying Filter with Photocatalytic Deodorizing Function

This filter incorporates the benefits the Air Purifying Filter and Photocatalytic Deodorizing Filter in a single unit. Combining the two filters in this way increases the active surface area of the new filter. This larger surface area allows the filter to effectively trap microscopic particles, decompose odours and deactivate bacteria and viruses even for the high volume of air required to air-condition large living rooms. The filter can be used for approximately 3 years if periodic maintenance is performed.

1.9 Night Set Mode

This mode automatically keeps temperature slightly higher than the temperature setting. In this way, there is no need to worry about overcooling while sleeping, and it also saves on electricity.

- Set the OFF timer.
- The unit will cool the room at the set temperature for 1 hour from when the timer starts counting.
- After that, the unit will raise temperature 0.5°C higher than the set temperature and cool for 30 minutes.
- After that, the unit will raise temperature another 0.5°C and continue cooling at that temperature.
- It is possible to change the airflow setting while the OFF timer is in operation. However, changing the airflow setting cancels the shift-up of the set temperature.



Notes: No higher temperature setting on programme dry or auto operation.

1.10 Powerful Operation

During cool and dry operation, when the POWERFUL button on the remote controller is pressed, the thermistor setting is changed to the lowest setting of the remote controller and the fan runs at the maximum rpm (Note). During fan operation, air is blown at the maximum fan rpm.

Note ··· Max. fan rpm = H tap set by remote controller + 50 rpm

Notes:

- In COOL mode
  To maximize the cooling effect, the temperature setting is fixed to 18°C and the air flow rate is fixed to the maximum setting.
  (H tap + 50 r.p.m)
  The temperature and air flow settings are not variable.
- In DRY mode
  The temperature setting is lowered by 3°C and the air flow rate is slightly increased. You can repeat POWERFUL operation if you need even more dehumidification.

1.11 3-minutes Standby Function

When the compressor turns OFF, it does not turn ON for 3 minutes.

1.12 Auto-restart Function

If there is a power cut when the unit is operating, it will automatically resume the same operating mode when the power is restored.

Note: It takes 3 minutes to restart the operation because the 3-minute standby function is activated.

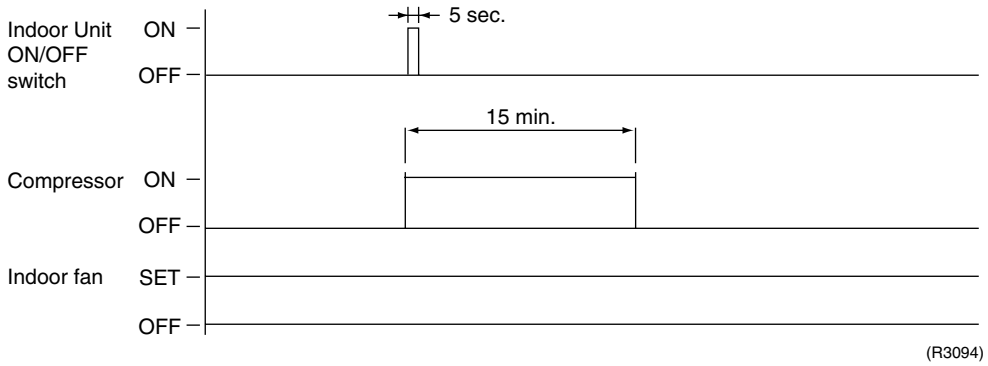
Store Data

- Power ON/OFF
- Operation mode
- Set temperature
- Fan operation mode
- Swing ON/OFF
- Flap angle
- ON/OFF Timer

1.13 Test Run Function

A compressor test run can be made regardless of room temperature and without turning the compressor ON-OFF from the thermistor.

The compressor can be turned ON for 15 minutes in either the cool or dry mode, even though the compressor is OFF on the thermostat. This is done by setting the test mode from the remote controller.



Trial operation from Remote Controller	
(1)	Press ON/OFF button to turn on the system.
(2)	Simultaneously press DOWN, UP, and MODE buttons.
(3)	Press MODE button twice. ("*T*" will appear on the display to indicate that Trial Operation mode is selected.)
(4)	Trial run mode terminates in approx. 30 minutes and switches into normal mode. To quit a trial operation, press ON/OFF button.

- After trial operation is complete, set the temperature to a normal level (26°C to 28°C).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

2. Functions of Heat Pump Models

2.1 Frequency Principle

Main Control Parameters

The compressor is frequency-controlled during normal operation. The target frequency is set by the following 2 parameters coming from the operating indoor unit:

- The load condition of the operating indoor unit
- The difference between the room temperature and the set temperature

Additional Control Parameters

The target frequency is adapted by additional parameters in the following cases:

- Frequency restrictions
- Initial settings
- Forced cooling operation

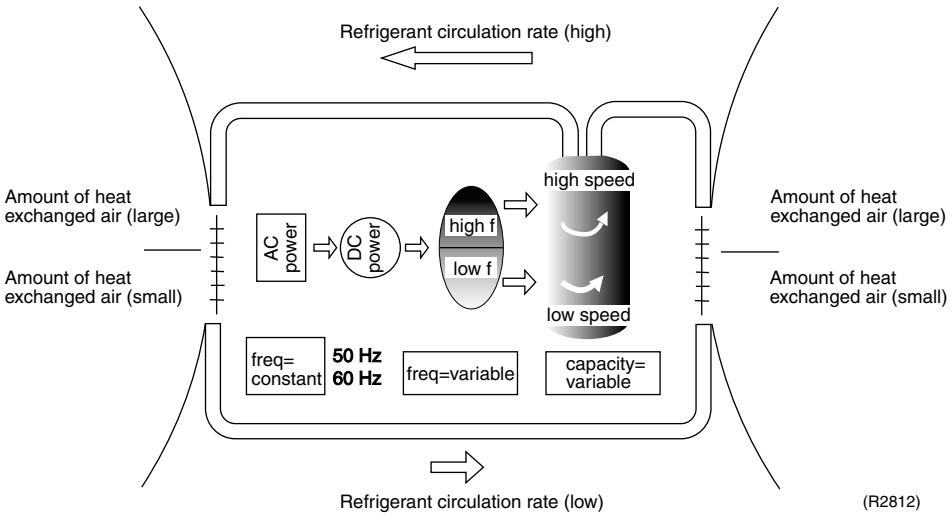
Inverter Principle

To regulate the capacity, a frequency control is needed. The inverter makes it possible to vary the rotation speed of the compressor. The following table explains the conversion principle:

Phase	Description
1	The supplied AC power source is converted into the DC power source for the present.
2	The DC power source is reconverted into the three phase AC power source with variable frequency. ■ When the frequency increases, the rotation speed of the compressor increases resulting in an increased refrigerant circulation. This leads to a higher amount of the heat exchange per unit. ■ When the frequency decreases, the rotation speed of the compressor decreases resulting in a decreased refrigerant circulation. This leads to a lower amount of the heat exchange per unit.

Drawing of Inverter

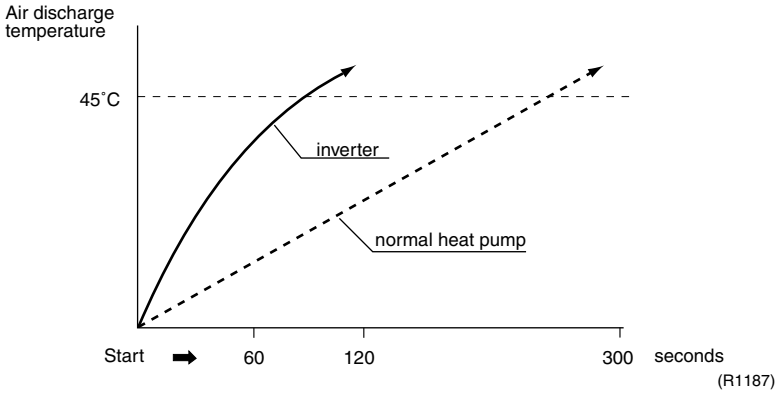
The following drawing shows a schematic view of the inverter principle:



Inverter Features

The inverter provides the following features:

- The regulating capacity can be changed according to the changes in the outdoor air temperature and cooling / heating load.
- Quick heating and quick cooling
  The compressor rotational speed is increased when starting the heating (or cooling). This enables a quick set temperature.



- Even during extreme cold weather, the high capacity is achieved. It is maintained even when the outdoor air temperature is 2°C.
- Comfortable air conditioning
  A detailed adjustment is integrated to ensure a fixed room temperature. It is possible to air condition with a small room temperature variation.
- Energy saving heating and cooling
  Once the set temperature is reached, the energy saving operation enables to maintain the room temperature at low power.

Frequency Limits

The following table shows the functions that define the minimum and maximum frequency:

Frequency limits	Limited during the activation of following functions
Low	■ Four way valve activating guarantee. Refer to page 42.
High	■ Input current control. Refer to page 43. ■ Compressor protection function. Refer to page 42. ■ Heating peak-cut control. Refer to page 44. ■ Freeze-up protection control. Refer to page 43. ■ Defrost control. Refer to page 46.

Forced Cooling Operation

For more information, refer to “Forced operation mode” on page 48.

2.2 Power-Airflow Dual Flaps, Wide-Angle Louvers and Auto-Swing

Power-Airflow Dual Flaps

The large flaps send a large volume of air downwards to the floor. The flap provides an optimum control area in cooling, heating and dry mode.

Heating Mode
During heating mode, the large flap enables direct warm air straight downwards. The flap presses the warm air above the floor to reach the entire room.

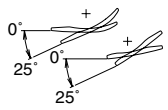
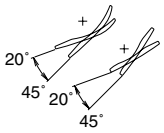
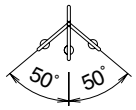
Cooling Mode
During cooling mode, the flap retracts into the indoor unit. Then, cool air can be blown far and pervaded all over the room.

Wide-Angle Louvres

The louvres, made of elastic synthetic resin, provide a wide range of airflow that guarantees a comfortable air distribution.

Auto-Swing

The following table explains the auto-swing process for heating, cooling, dry and fan :

Vertical Swing (up and down)		Horizontal Swing (right and left: manual)
Cooling, Dry	Heating, Fan	
 (R2946)	 (R2947)	 (R2817)

2.3 Fan Speed Control for Indoor Units

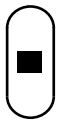
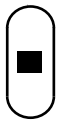
Control Mode

The air flow rate can be automatically controlled depending on the difference between the set temperature and the room temperature. This is done through phase control and Hall IC control.

For more information about Hall IC, refer to troubleshooting for fan motor on page 90.

Phase Steps

Phase control and fan speed control contains 8 steps: LLL, LL, L, ML, M, MH, H and HH.

Step	Cooling	Heating	Dry mode
LLL (Heating thermostat OFF)	 (R2818)	 (R2818)	25 · 35kW class : 500 - 860 rpm (During powerful operation : 850 - 910 rpm)
LL (Cooling thermostat OFF)			
L			
ML			
M			
MH			
H			
HH (Powerful)			

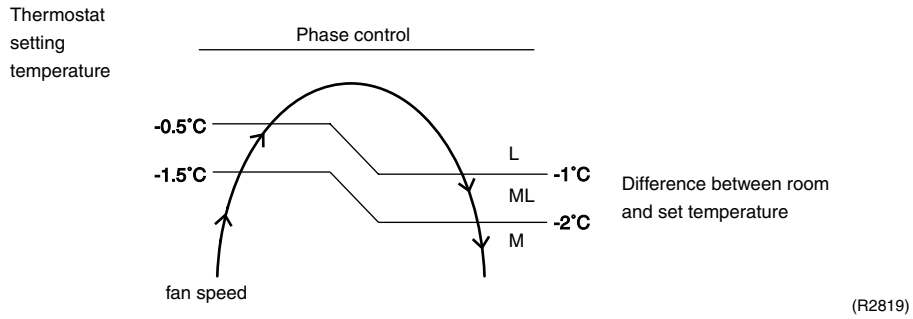
= Within this range the air flow rate is automatically controlled when the FAN setting button is set to automatic.

Note:

1. During powerful operation, fan operate H tap + 50 - 90 rpm.
2. Fan stops during defrost operation.

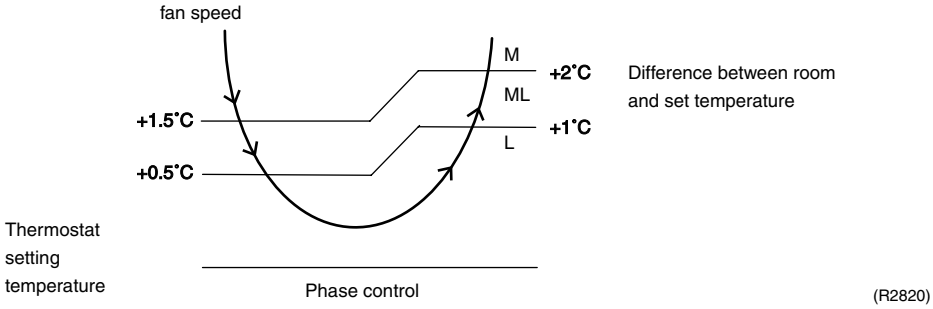
Air Flow Rate Control for Heating

The following drawing explains the principle for fan speed control for heating:



Air Flow Rate Control for Cooling

The following drawing explains the principle of fan speed control for cooling:



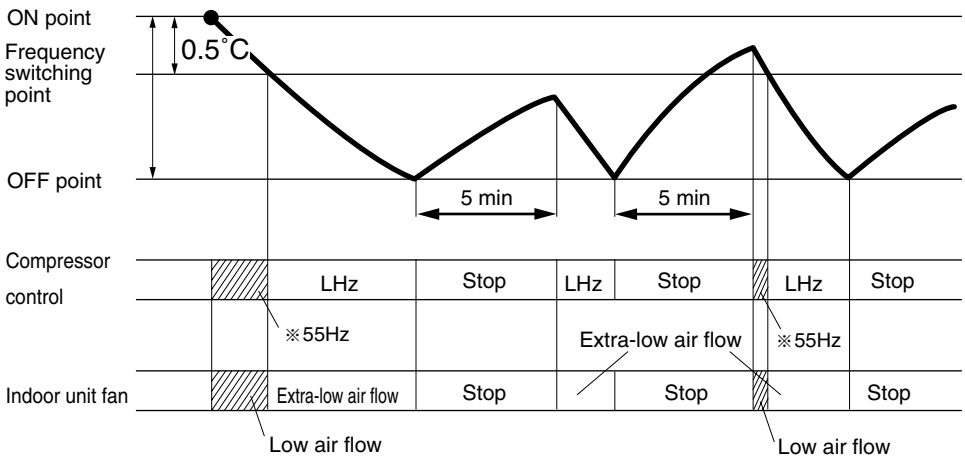
2.4 Programme Dry Function

Programme dry function removes humidity while preventing the room temperature from lowering.
Since the microcomputer controls both the temperature and air flow volume, the temperature adjustment and fan adjustment buttons are inoperable in this mode.

In Case of Inverter Units

The microcomputer automatically sets the temperature and fan settings. The difference between the room temperature at startup and the temperature set by the microcomputer is divided into two zones. Then, the unit operates in the dry mode with an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

Room temperature at startup	Temperature (ON point) at which operation starts	Frequency switching point	Temperature difference for operation stop
24°C	Room temperature at startup	0.5°C	1.5°C
18°C	18°C		1.0°C
17°C		—	



LHz indicates low frequency. Item marked with varies depending on models.

(R1359)

2.5 Automatic Operation

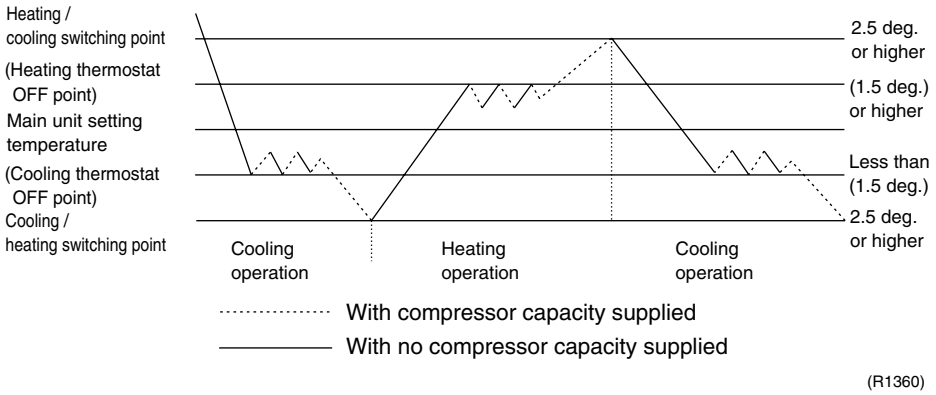
Automatic Cooling / Heating Function (Heat Pump Only)

When the AUTO mode is selected with the remote controller, the microcomputer automatically determines the operation mode from cooling and heating according to the room temperature and setting temperature at the time of the operation startup, and automatically operates in that mode.

The unit automatically switches the operation mode to cooling or heating to maintain the room temperature at the main unit setting temperature.

Detailed Explanation of the Function

1. Remote controller setting temperature is set as automatic cooling / heating setting temperature (18 to 30°C).
2. Main unit setting temperature equals remote controller setting temperature plus correction value (correction value / cooling: 0 deg, heating: 2 deg.).
3. Operation ON / OFF point and mode switching point are as follows.
   ① Heating → Cooling switching point:
   Room temperature ≥ Main unit setting temperature +2.5 deg.
   ② Cooling → Heating switching point:
   Room temperature < Main unit setting temperature –2.5 deg.
   ③ Thermostat ON / OFF point is the same as the ON / OFF point of cooling or heating operation.
4. During initial operation
   Room temperature ≥ Remote controller setting temperature: Cooling operation
   Room temperature < Remote controller setting temperature: Heating operation



(R1360)

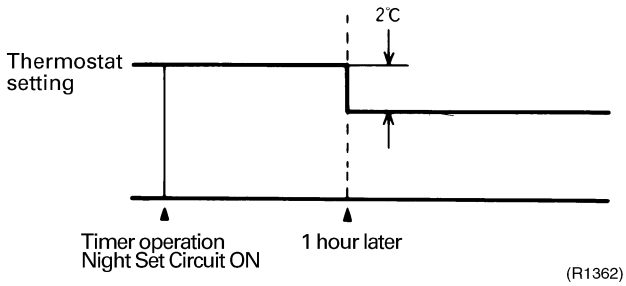
2.6 Night Set Mode

When the OFF timer is set, the Night Set circuit automatically activates.
The Night Set circuit maintains the airflow setting made by users.

The Night Set Circuit

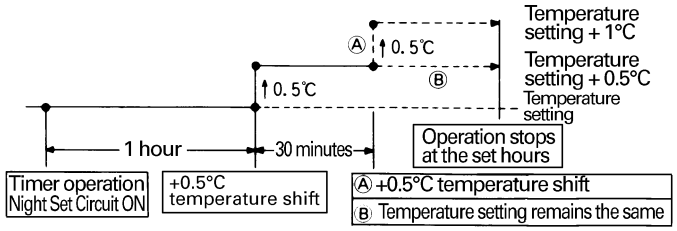
The Night Set circuit continues heating or cooling the room at the set temperature for the first one hour, then automatically raises the temperature setting slightly in the case of heating, or lowers it slightly in the case of cooling, for economical operations. This prevents excessive heating in winter and excessive cooling in summer to ensure comfortable sleeping conditions, and also conserves electricity.

Heating Operation



(R1362)

Cooling Operation



Ⓐ : ● When outside temperature is normal and room temperature is at set temperature.
Ⓑ : ● When outside temperature is high (27°C or higher).

(R1361)

2.7 Powerful Operation

Outline

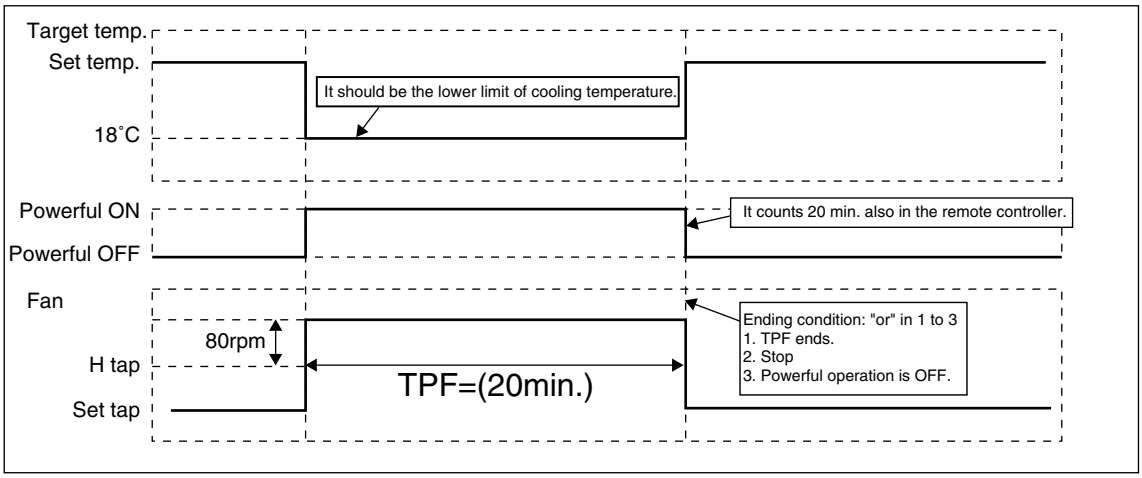
In order to exploit the cooling and heating capacity to full extent, operate the air conditioner by increasing the indoor fan rotating speed.

Details of the Control

When Powerful button is pushed in each operation mode, the fan speed / setting temperature will be converted to the following states in a period of twenty minutes.

Operation mode	Fan speed	Target set temperature
Cooling	H tap + 90 rpm	18°C
Dry	Dry rotating speed + 50 rpm	Normally targeted temperature in dry operation; Approx. –2°C
Heating	H tap + 90 rpm	30°C
Fan	H tap + 90 rpm	—
Automatic	Same as cooling / heating in Powerful operation	The target is kept unchanged

Ex.) : Powerful operation in cooling mode.



(R2823)

2.8 Other Functions

2.8.1 Hot Start Function

Heat Pump Only

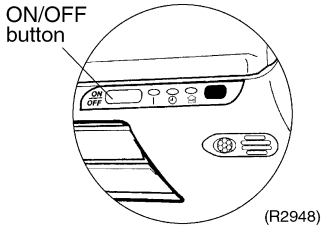
In order to prevent the cold air blast that normally comes when heating is started, the temperature of the heat exchanger of the indoor unit is detected, and either the air flow is stopped or is made very weak thereby carrying out comfortable heating of the room.
*The cold air blast is also prevented using a similar control when the defrosting operation is started or when the thermostat gets turned ON.

2.8.2 Signal Receiving Sign

When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

2.8.3 ON/OFF Button on Indoor Unit

An ON/OFF switch is provided on the front panel of the unit. Use this switch when the remote controller is missing or if its battery has run out.
Every press of the switch changes from Operation to Stop or from Stop to Operation



- Push this button once to start operation. Push once again to stop it.
- This button is useful when the remote controller is missing.
- The operation mode refers to the following table.

	Mode	Temperature setting	Air flow rate
Heat Pump	AUTO	25°C	AUTO

2.8.4 Air Purifying Filter with Photocatalytic Deodorizing Function

This filter incorporates the benefits the Air Purifying Filter and Photocatalytic Deodorizing Filter in a single unit. Combining the two filters in this way increases the active surface area of the new filter. This larger surface area allows the filter to effectively trap microscopic particles, decompose odours and deactivate bacteria and viruses even for the high volume of air required to air-condition large living rooms. The filter can be used for approximately 3 years if periodic maintenance is performed.

2.8.5 Mold Proof Air Filter

The filter net is treated with mold resisting agent TBZ (harmless, colorless, and odorless). Due to this treatment, the amount of mold growth is much smaller than that of normal filters.

2.8.6 Self-Diagnosis Digital Display

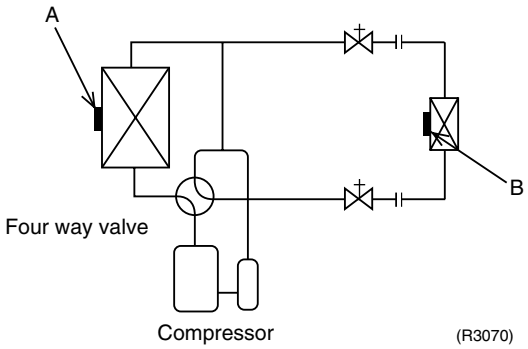
The microcomputer continuously monitors main operating conditions of the indoor unit, outdoor unit and the entire system. When an abnormality occur, the LCD remote controller displays error code. These indications allow prompt maintenance operations.

2.8.7 Auto-restart Function

Even if a power failure (including one for just a moment) occurs during the operation, the operation restarts in the condition before power failure automatically when power is restored. (Note) It takes 3 minutes to restart the operation because the 3-minutes standby function is activated.

2.9 Function of Thermistor

2.9.1 Heat Pump Model



A Outdoor Heat Exchanger Thermistor (DCB)

1. The outdoor heat exchanger thermistor is used for high pressure protection during cooling operation.

B Indoor Heat Exchanger Thermistor (DCN)

1. The indoor heat exchanger thermistor is used to prevent freezing.
   During the cooling operation, if the temperature drops abnormally, the operating frequency becomes lower, then the operation must be halted.
2. The indoor heat exchanger thermistor is used for anti-icing control.
   During the cooling operation, if the heat exchanger temperature in the room where operation is halted becomes –1°C, it is assumed as icing.

3. Control for Heat Pump Models

3.1 Mode Hierarchy

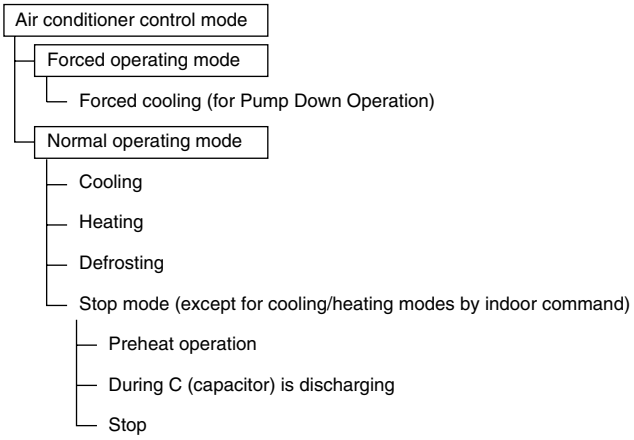
Outline

There are two modes; the mode selected in user's place (normal air conditioning mode) and forced operation mode for installation and providing service.

Detail

Heat pump model

There are following modes; stop, cooling (includes drying), heating (include defrosting)



(R2829)

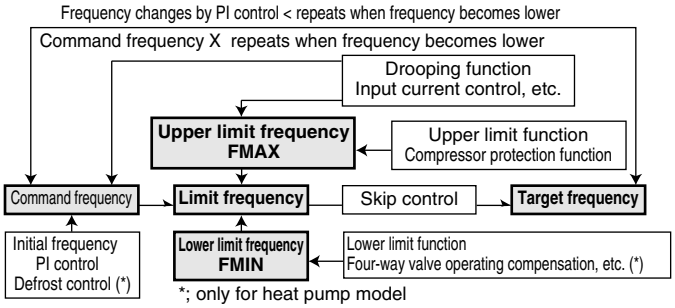
Note: Unless specified otherwise, an indoor dry operation command must be regarded as cooling operation.

3.2 Frequency Control

Outline

Frequency will be determined according to the difference between room and set temperature. The function is explained as follows.

1. How to determine frequency.
2. Frequency command from an indoor unit. (The difference between a room temperature and the temperature set by the remote controller.)
3. Frequency command from an indoor unit.
4. Frequency initial setting.
5. PI control.



(R2831)

Detail

How to Determine Frequency

The compressor's frequency will finally be determined by taking the following steps.

For Heat Pump Model

1. Determine command frequency

■ Command frequency will be determined in the following order of priority.

1.1 Limiting frequency by drooping function

■ Input current, low Hz high pressure limit, peak cutting, freeze-up protection, dew prevention, fin thermistor temperature.

1.2 Limiting defrost control time

1.3 Forced cooling

1.4 Indoor frequency command

2. Determine upper limit frequency

■ Set a minimum value as an upper limit frequency among the frequency upper limits of the following functions:
Compressor protection, input current, Low Hz high pressure, peak cutting, freeze-up protection, defrost.

3. Determine lower limit frequency

■ Set a maximum value as an lower limit frequency among the frequency lower limits of the following functions:
Four way valve operating compensation, draft prevention, pressure difference upkeep.

4. Determine prohibited frequency

■ There is a certain prohibited frequency such as a power supply frequency.

Indoor Frequency Command (ΔD signal)

The difference between a room temperature and the temperature set by the remote controller will be taken as the "ΔD signal" and is used for frequency command.

Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal
0	∗Th OFF	2.0	4	4.0	8	6.0	C
0.5	1	2.5	5	4.5	9	6.5	D
1.0	2	3.0	6	5.0	A	7.0	E
1.5	3	3.5	7	5.5	B	7.5	F

∗Th OFF = Thermostat OFF

Frequency Initial Setting

■ Outline

When starting the compressor, or when conditions are varied due to the change of the room, the frequency must be initialized according to the ΔD value of the indoor unit and the Q value of the indoor unit.

Q value: Indoor unit output determined from indoor unit volume, air flow rate and other factors.

PI Control (Determine Frequency Up / Down by ΔD Signal)

1. P control
   Calculate ΔD value in each sampling time (20 seconds), and adjust the frequency according to its difference from the frequency previously calculated.
2. I control
   If the operating frequency is not change more than a certain fixed time, adjust the frequency up and down according to the ΔD value, obtaining the fixed ΔD value.
   When the ΔD value is small...lower the frequency.
   When the ΔD value is large...increase the frequency.
3. Limit of frequency variation width
   When the difference between input current and input current drooping value is less than 1.5 A, the frequency increase width must be limited.
4. Frequency management when other controls are functioning

■ When frequency is drooping;
Frequency management is carried out only when the frequency droops.

■ For limiting lower limit
Frequency management is carried out only when the frequency rises.

5. Upper and lower limit of frequency by PI control
   The frequency upper and lower limits are set depending on indoor unit.
   When low noise commands come from the indoor unit or when outdoor unit low noise or quiet commands come from indoor unit, the upper limit frequency must be lowered than the usual setting.

3.3 Controls at Mode Changing / Start-up

3.3.1 Preheating Operation

Outline

Operate the inverter in the open phase with the conditions including the preheating command (only for heat pump model) from the indoor, the outdoor air temperature .

Detail

Preheating ON Condition

- When outdoor air temperature is below 11.5°C, inverter in open phase operation starts.

OFF Condition

- When outdoor air temperature is higher than 13.5°C, inverter in open phase operation stops.

3.3.2 Four Way Valve Switching

Outline

Heat Pump Only

During the heating operation current must not be conducted and during cooling and defrosting current must be conducted. In order to eliminate the switching sound (as the four way valve coil switches from ON to OFF) when the cooling is stopped, the delay switch of the four way valve must be carried out after the operation stopped.

Detail

The OFF delay of four way valve
Energize the coil for 160 sec after unit operation is stopped.

3.3.3 Four Way Valve Activating Guarantee

Outline

Heat Pump Only

At the beginning of the operation as the four way valve is switched, acquire the differential pressure required for activating the four way valve by having output the operating frequency, which is more than a certain fixed frequency, for a certain fixed time.

Detail

Starting Conditions

1. When starting compressor for cooling.
2. When the operating mode changes from the previous time.
3. When starting compressor for defrosting or resetting.
4. When starting compressor for the first time after the reset with the power is ON.
   Set the lower limit frequency to 66 (model by model) Hz for 45 seconds with any conditions 1 through 4 above.

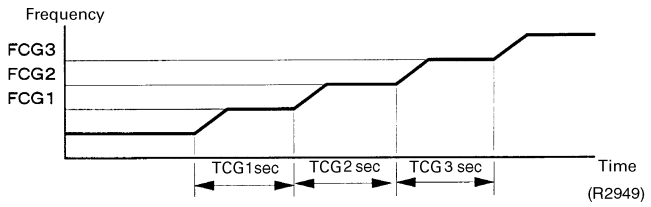
3.3.4 3-Minutes Standby

Prohibit to turn ON the compressor for 3 minutes after turning it off.
(Except when defrosting. (Only for Heat Pump Model).)

3.3.5 Compressor Protection Function

When turning the compressor from OFF to ON, the upper limit of frequency must be set as follows. (The function must not be used when defrosting (only for heat pump model).)

FCG 3	90
FCG 2	66
FCG 1	46
TCG 1	120
TCG 2	570
TCG 3	120



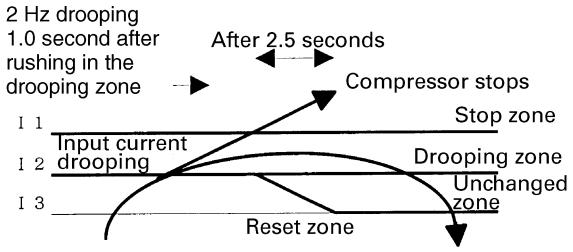
3.4 Input Current Control

Outline

Detect an input current by the CT during the compressor is running, and set the frequency upper limit from such input current.
In case of heat pump model, this control is the upper limit control function of the frequency which takes priority of the lower limit of four way valve activating guarantee.

Detail

The frequency control will be made within the following zones.



(R1378)

When a “stop current” continues for 2.5 seconds after entering the stop zone, the compressor operation stops.
If a “drooping current” continues for 1.0 second after entering the drooping zone, the frequency will be 2 Hz drooping.
Repeating the above drooping continues until the current enters the drooping zone without change.
In the unchanged zone, the frequency limit will remain.
In the return / reset zone, the frequency limit will be cancelled.

Limitation of current drooping and stop value according to the outdoor air temperature

1. In case the operation mode is cooling

- The current droops when outdoor air temperature becomes higher than a certain level (model by model).

2. In case the operation mode is heating (only for heat pump model)

- The current droops when outdoor air temperature becomes higher than a certain level (model by model).

3.5 Freeze-up Protection Control

Outline

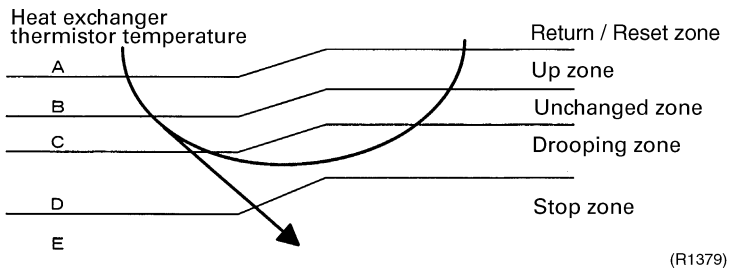
During cooling operation, the signals being sent from the indoor unit allow the operating frequency limitation and then prevent freezing of the indoor heat exchanger. (The signal from the indoor unit must be divided into the zones as the followings.

Detail

Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature after 2 sec from operation start.

Control in Each Zone



(R1379)

3.6 Heating Peak-cut Control

Outline

Heat Pump Only

During heating operation, the signals being sent from the indoor unit allow the operating frequency limitation and prevent abnormal high pressure. (The signal from the indoor unit must be divided as follows.)

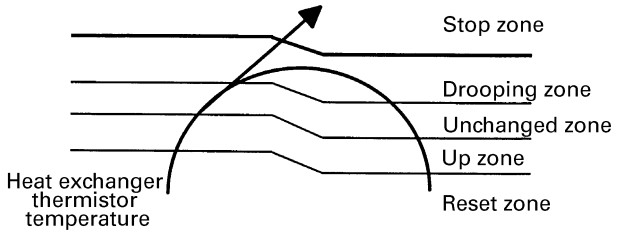
Detail

Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature after 2 sec. from operation start.

Control in Each Zone

The heat exchange intermediate temperature of indoor unit controls the following.



3.7 Fan Control

Outline

Fan control is carried out according to the following priority.

1. Fan ON control for electric component cooling fan
2. Fan control when defrosting
3. Fan OFF delay when stopped
4. ON/OFF control when cooling operation
5. Tap control when drooping function is working
6. Fan control when forced operation
7. Fan control in low noise mode
8. Fan control during heating operation
9. Fan control in the quiet mode
10. Fan control in the powerful mode
11. Fan control for pressure difference upkeep

Detail

Fan OFF Control when Stopped

- Fan OFF delay for 60 seconds must be made when the compressor is stopped.

3.8 Liquid Compression Protection Function 1 (Securing of Differential Pressure and Blown Air Temperature)

Outline

To secure the reliability of the compressor (for dryness of suction refrigerant and differential pressure) which is the primary purpose of the compressor, the lower limit of the output frequency is limited to two stages under the condition of outside air temperature. This time, in addition to this purpose, this function is adopted also for prevention of cold draught by securing the blown air temperature at the time of heating operation by low-temperature out side air.

Processing

1. At the first step

① During operation of compressors.
② Outdoor temperature ≤ DOA1CG
■ If ① and ② are under the simultaneous condition with AND, the lower limit of frequency in this function is set at FCG7.

③ Compressors stop.
④ Outdoor temperature ≥ DOA2CG
■ If ③ and ④ are under the simultaneous condition with OR, the lower limit of frequency at the first step control is cancelled.

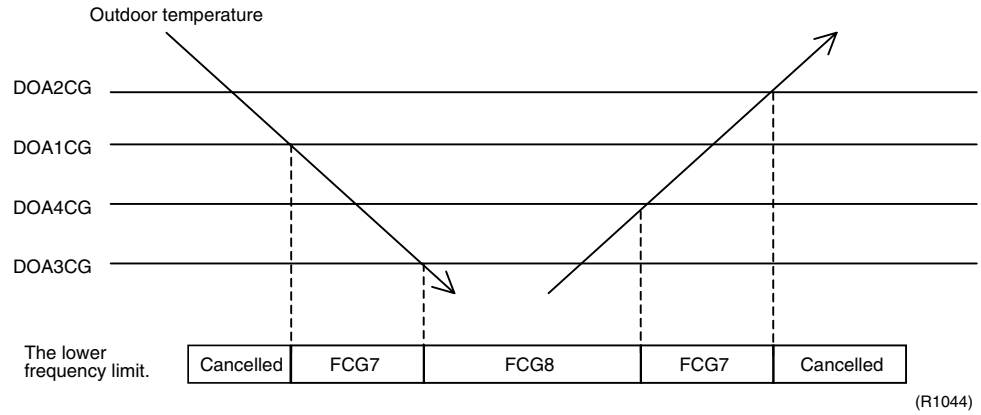
2. At the second step

① During operation of compressors
② Outdoor temperature ≤ DOA3CG
■ If ① and ② are under the simultaneous condition with AND, the lower limit of frequency in this function is set at FCG8.

③ Compressors stop.
④ Outdoor temperature ≥ DOA4CG
■ If ③ and ④ are under the coordinate condition with OR, the lower limit of frequency at the second step control is cancelled.

3. The set of a constant

DOA1CG, DOA2CG, DOA3CG, FCG7 and FCG8 have constants for Cooling / Heating separately and these constants are distinguished with a suffix c/w.



4. Actual constant

Cooling	
DOA1CGC	18°C
DOA2CGC	20°C
DOA3CGC	14°C
DOA4CGC	16°C
FCG7C	34 Hz
FCG8C	34 Hz

Heating	
DOA1CGW	0°C
DOA2CGW	2°C
DOA3CGW	–4°C
DOA4CGW	–2°C
FCG7W	34 Hz
FCG8W	34 Hz

* DOA : Outdoor air temperature
  CGC : Compressor guard for cooling
  CGW : Compressor guard for heating
  FCG : Frequency guard for compressor protection
* Common setting for 25 / 35 class

3.9 Liquid Compression Protection Function 2

Outline

In order to obtain the dependability of the compressor, the compressor must be stopped according to the conditions of the temperature of the outdoor air and outdoor heat exchanger.

Detail

■ Operation stop depending on the outdoor air temperature

Compressor operation turns OFF under the conditions that the system is in cooling operation and outdoor air temperature is below 0°C.

3.10 Defrost Control

Outline

Heat Pump Only

Defrosting is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than its fixed value when finishing.

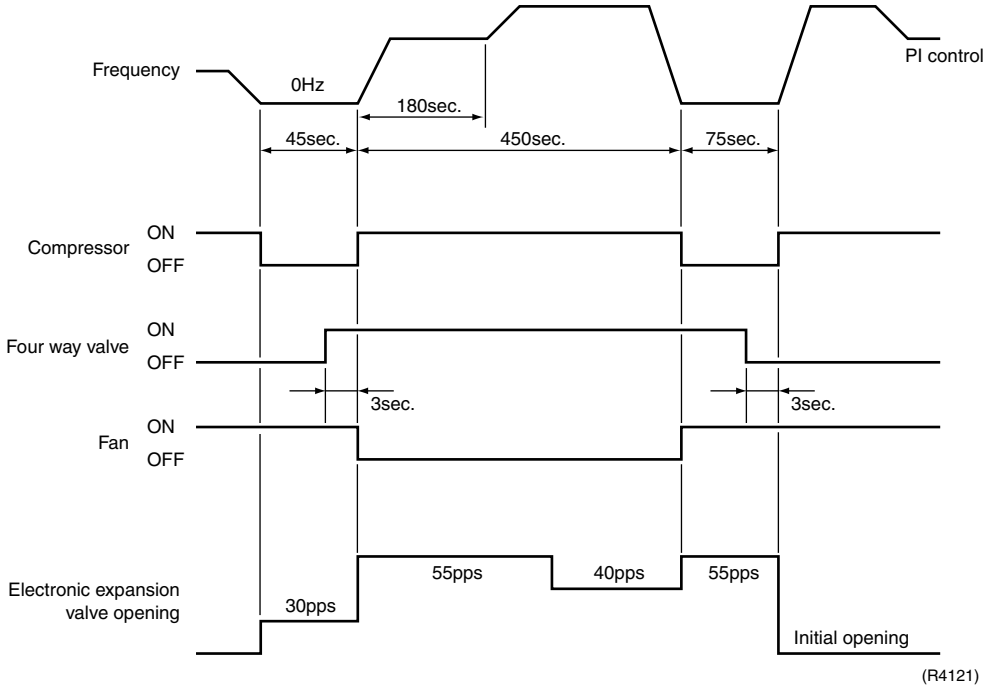
Detail

Conditions for Starting Defrost

The starting conditions must be made with the outdoor air temperature and heat exchanger temperature. Under the conditions that the system is in heating operation, 6 minutes after the compressor is started and more than 32 minutes of accumulated time pass since the start of the operation or ending the defrosting.

Conditions for Canceling Defrost

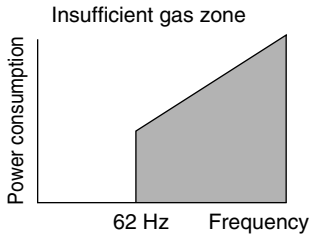
The judgment must be made with heat exchanger temperature. (4°C~24°C)



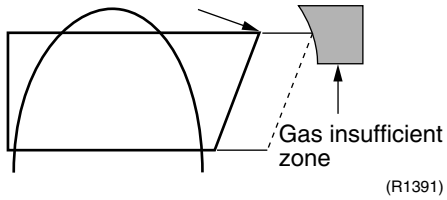
3.11 Insufficient Gas Control

Outline

If a power consumption is below the specified value in which the frequency is higher than the specified frequency, it must be regarded as gas insufficient.



With the conventional function, a power consumption is weak comparing with that in the normal operation when gas is insufficient, and gas insufficiency is detected by checking a power consumption.



Detail

Judgment by Input Current

When an output frequency is exceeds 62 Hz and the input current is less than specified value, the adjustment is made for insufficient gas.

3.12 Forced Operation Mode

Outline

Forced operating mode includes only forced cooling.

Detail

Forced Cooling

Item	Forced Cooling
Forced operation allowing conditions	1) The outdoor unit is not abnormal and not in the 3-minute stand-by mode.
	2) The operating mode of the outdoor unit is the stop mode.
	3) The forced operation is ON. The forced operation is allowed when the above “and” conditions are met.
Starting/adjustment	If the forced operation switch is pressed as the above conditions are met.
1) Command frequency	■ 66 Hz
2) Outdoor unit adjustment	■ Compressor is in operation
3) Indoor unit adjustment	■ Transmit the command of forced draft to the indoor unit.
End	1) When the forced operation switch is pressed again.
	2) The operation is to end automatically after 15 min.
Others	The protect functions are prior to all others in the forced operation.

3.13 Additional Function

3.13.1 Powerful Operation Mode

Compressor operating frequency is increased to PI Max. (Max. Hz of operating room) and outdoor unit airflow rate is increased.

3.13.2 Voltage Detection Function

Power supply voltage is detected each time equipment operation starts.

Part 5
System Configuration

1. System Configuration 50
2. Instructions 51
   2.1 Manual Contents by Models 51
   2.2 Safety Precautions 52
   2.3 Names of Parts 54
   2.4 Preparation before Operation 63
   2.5 AUTO • DRY • COOL • HEAT • FAN Operation 66
   2.6 Adjusting the Air Flow Direction 68
   2.7 POWERFUL Operation 69
   2.8 TIMER Operation 70
   2.9 Care and Cleaning 72
   2.10 Troubleshooting 78

1. System Configuration

After the installation and test operation of the room air conditioner have been completed, it should be operated and handled as described below. Every user would like to know the correct method of operation of the room air conditioner, to check if it is capable of cooling (or heating) well, and to know a clever method of using it.
In order to meet this expectation of the users, giving sufficient explanations taking enough time can be said to reduce about 80% of the requests for servicing. However good the installation work is and however good the functions are, the customer may blame either the room air conditioner or its installation work because of improper handling. The installation work and handing over of the unit can only be considered to have been completed when its handling has been explained to the user without using technical terms but giving full knowledge of the equipment.

2. Instructions

2.1 Manual Contents by Models

Reference Page

Models	Cooling Only Models		Heat Pump Models
	FT25/35CV1A	FT50/60CV1A	FTY25/35CVMA
Read before Operation			
Safety Precautions	52	52	52
Names of Parts	54	57	60
Preparation before Operation ★	63	63	63
Operation			
AUTO, DRY, COOL, HEAT, FAN Operation ★	66	66	66
Adjusting the Air Flow Direction ★	68	68	68
POWERFUL Operation ★	69	69	69
TIMER Operation ★	70	70	70
Care			
Care and Cleaning	72	75	72
Troubleshooting			
Troubleshooting	78	78	78
Drawing No.	3P132108-4C	3P132108-5C	3P132108-6C

★ : Illustrations and instructions are appropriate for FTY25/35CVMA (heat pump models) as representative.

2.2 Safety Precautions

Safety precautions

- Keep this manual where the operator can easily find them.
- Read this manual attentively before starting up the unit.
- For safety reason the operator must read the following cautions carefully.
- This manual classifies precautions into WARNINGS and CAUTIONS. Be sure to follow all precautions below: they are all important for ensuring safety.

⚠ WARNING	⚠ CAUTION
If you do not follow these instructions exactly, the unit may cause property damage, personal injury or loss of life.	If you do not follow these instructions exactly, the unit may cause minor or moderate property damage or personal injury.

Never do.

Be sure to follow the instructions.

Be sure to earth the air conditioner.

Never cause the air conditioner (including the remote controller) to get wet.

Never touch the air conditioner (including the remote controller) with a wet hand.

⚠ WARNING

- In order to avoid fire, explosion or injury, do not operate the unit when harmful, among which flammable or corrosive gases, are detected near the unit.
- It is not good for health to expose your body to the air flow for a long time.
- Do not put a finger, a rod or other objects into the air outlet or inlet. As the fan is rotating at a high speed, it will cause injury.
- Do not attempt to repair, relocate, modify or reinstall the air conditioner by yourself. Incorrect work will cause electric shocks, fire etc.
  For repairs and reinstallation, consult your Daikin dealer for advice and information.

- The refrigerant used in the air conditioner is safe. Although leaks should not occur, if for some reason any refrigerant happens to leak into the room, make sure it does not come in contact with any flame as of gas heaters, kerosene heaters or gas range.
- If the air conditioner is not cooling properly, the refrigerant may be leaking, so call your dealer.
  When carrying out repairs accompanying adding refrigerant, check the content of the repairs with our service staff.
- Do not attempt to install the air conditioner by your self. Incorrect work will result in water leakage, electric shocks or fire. For installation, consult the dealer or a qualified technician.
- In order to avoid electric shock, fire or injury, if you detect any abnormally such as smell of fire, stop the operation and turn off the breaker. And call your dealer for instructions.

⚠ CAUTION

- The air conditioner must be earthed. Incomplete earthing may result in electric shocks. Do not connect the earth line to a gas pipe, water pipe, lightning rod, or a telephone earth line.

- In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.
- Never expose little children, plants or animals directly to the air flow.
- Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.
- Do not block air inlets nor outlets. Impaired air flow may result in insufficient performance or trouble.

- Do not stand or sit on the outdoor unit. Do not place any object on the unit to avoid injury, do not remove the fan guard.
- Do not place anything under the indoor or outdoor unit that must be kept away from moisture. In certain conditions, moisture in the air may condense and drip.
- After a long use, check the unit stand and fittings for damage.
- Do not touch the air inlet and aluminum fins of outdoor unit. It may cause injury.
- The appliance is not intended for use by young children or infirm persons without supervision.
- Young children shuld be supervised to ensure that they do not play with the appliance.

- To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.
- Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.
- Do not connect the air conditioner to a power supply different from the one as specified. It may cause trouble or fire.
- Depending on the environment, an earth leakage breaker must be installed. Lack of an earth leakage breaker may result in electric shocks.
- Arrange the drain hose to ensure smooth drainage. Incomplete draining may cause wetting of the building, furniture etc.

- Do not operate the air conditioner with wet hands.

- Do not wash the indoor unit with excessive water, only use a slightly wet cloth.
- Do not place things such as vessels containing water or anything else on top of the unit. Water may penetrate into the unit and degrade electrical insulations, resulting in an electric shock.

Installation site

■ To install the air conditioner in the following types of environments, consult the dealer.
- Places with an oily ambient or where steam or soot occurs.
- Salty environment such as coastal areas.
- Places where sulfide gas occurs such as hot springs.
- Places where snow may block the outdoor unit.

The drain from the outdoor unit must be discharged to a place of good drainage.

Consider nuisance to your neighbours from noises

■ For installation, choose a place as described below.
- A place solid enough to bear the weight of the unit which does not amplify the operation noise or vibration.
- A place from where the air discharged from the outdoor unit or the operation noise will not annoy your neighbours.

Electrical work

- For power supply, be sure to use a separate power circuit dedicated to the air conditioner.

System relocation

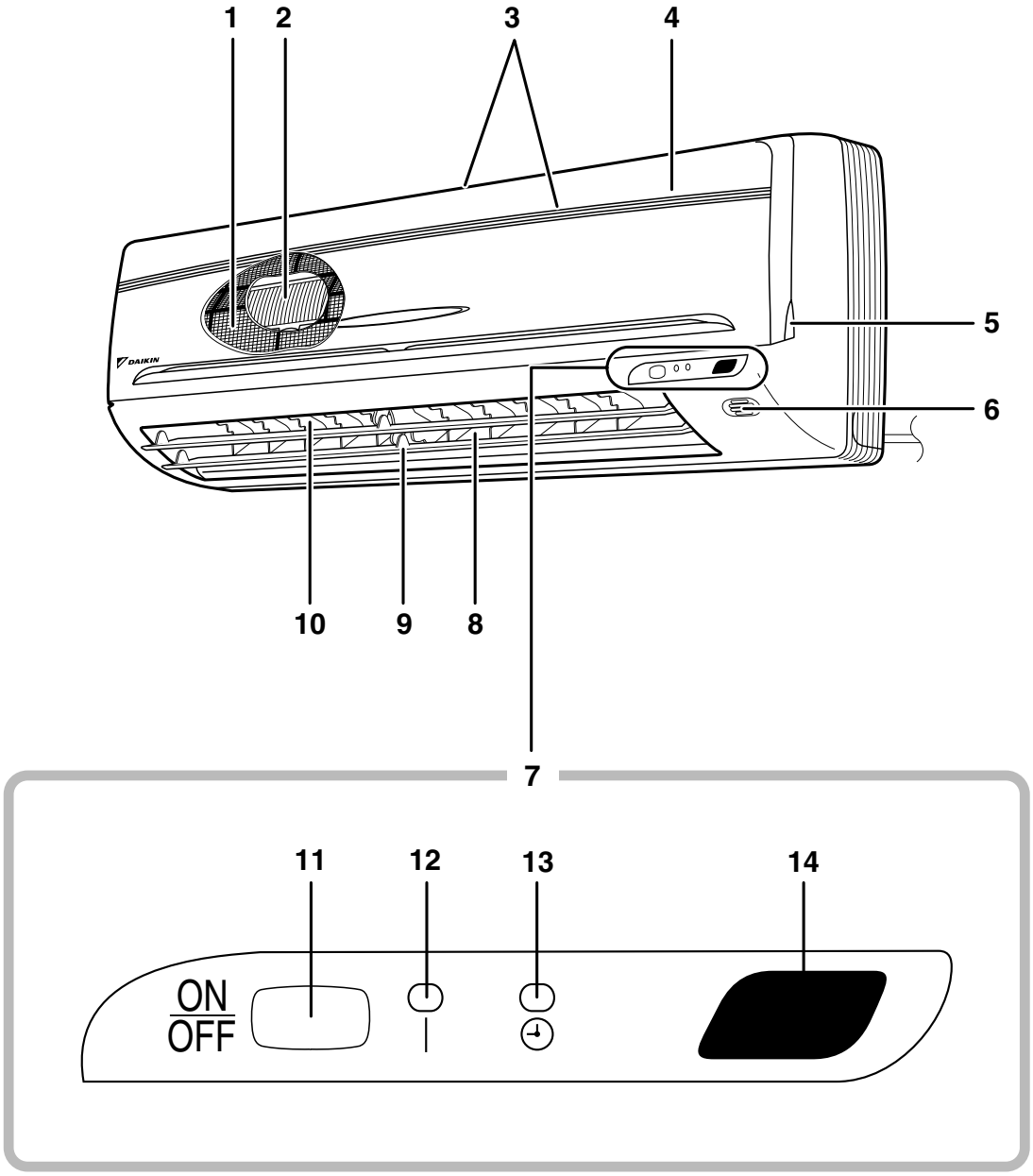
- Relocating the air conditioner requires specialized knowledge and skills. Please consult the dealer if relocation is necessary for moving or remodeling.

2.3 Names of Parts

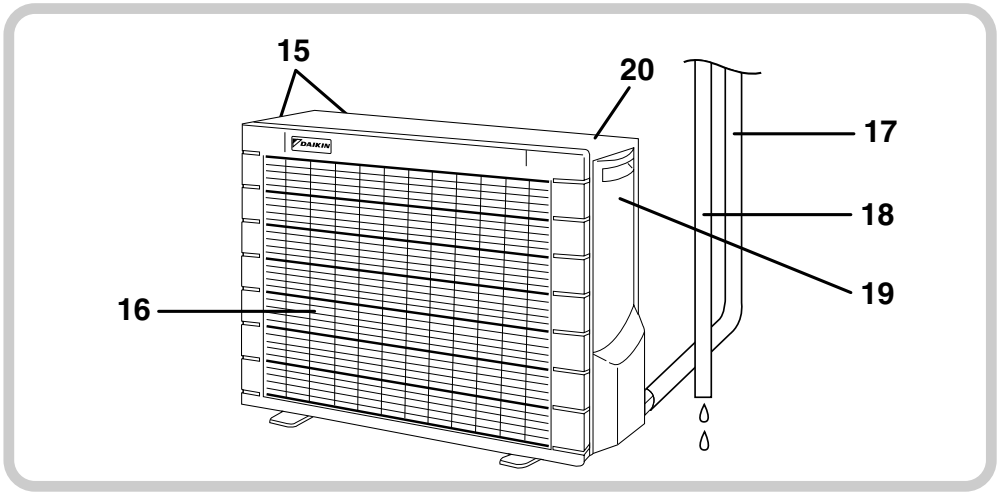
FT25/35CV1A

Names of parts

■ Indoor Unit



■ Outdoor Unit



■ Indoor Unit

1. **Air filter**
2. **Air purifying filter with photocatalytic deodorizing function:**
   - These filters are attached to the inside of the air filters.
3. **Air inlet**
4. **Front grille**
5. **Grille tab**
6. **Room temperature sensor:**
   - It senses the air temperature around the unit.
7. **Display**
8. **Air outlet**
9. **Flaps (horizontal blades)**
10. **Louvers (vertical blades):**
    - The louvers are inside of the air outlet.
11. **Indoor Unit ON/OFF switch:**
    - Push this switch once to start operation. Push once again to stop it.
    - The operation mode refers to the following table.

Mode	Temperature setting	Air flow rate
COOL	22°C	AUTO

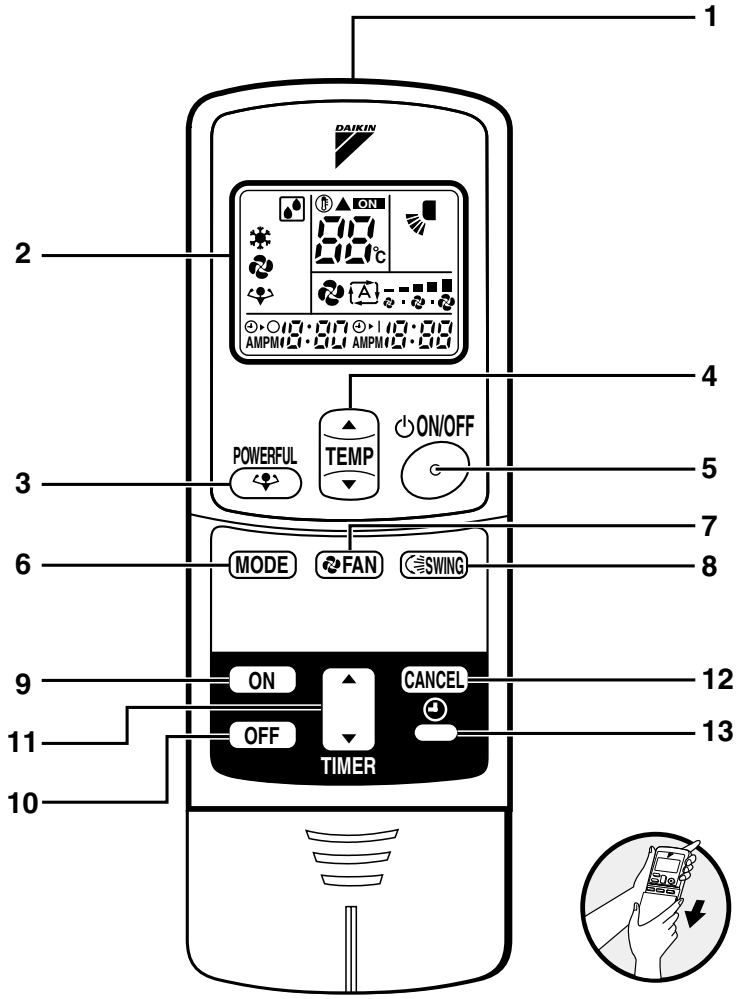
    - This switch is useful when the remote controller is missing.
12. **OPERATION lamp (green)**
13. **TIMER lamp (Yellow)**
14. **Signal receiver:**
    - It receives signals from the remote controller.
    - When the unit receives a signal, you will hear a short beep.
      - Operation start .....beep-beep
      - Settings changed.....beep
      - Operation stop .....beeeeep

■ Outdoor Unit

15. **Air inlet:** (Back and side)
16. **Air outlet**
17. **Refrigerant piping and inter-unit cable**
18. **Drain hose**
19. **Earth terminal:**
    - It is inside of this cover.
20. **Outside air temperature sensor:**
    - It senses the ambient temperature around the unit.

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



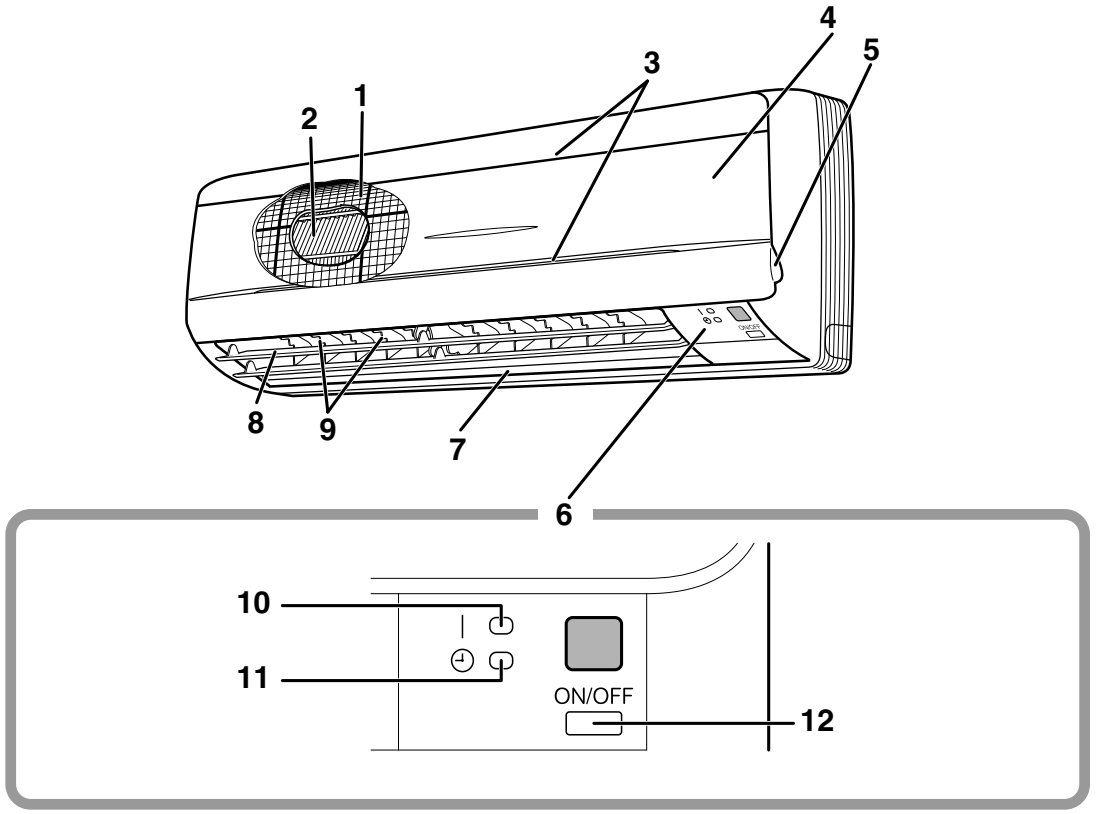
<ARC423A18>

1. **Signal transmitter:**
   - It sends signals to the indoor unit.
2. **Display:**
   - It displays the current settings. (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. **POWERFUL button:**
   for POWERFUL operation
4. **TEMPERATURE adjustment button:**
   - It changes the temperature setting.
5. **ON/OFF button:**
   - Press this button once to start operation. Press once again to stop it.
6. **MODE selector button:**
   - It selects the operation mode. (DRY/COOL/FAN)
7. **FAN setting button:**
   - It selects the air flow rate setting.
8. **SWING button**
9. **ON TIMER button**
10. **OFF TIMER button**
11. **TIMER Setting button:**
    - It changes the time setting.
12. **TIMER CANCEL button:**
    - It cancels the timer setting.
13. **CLOCK button**

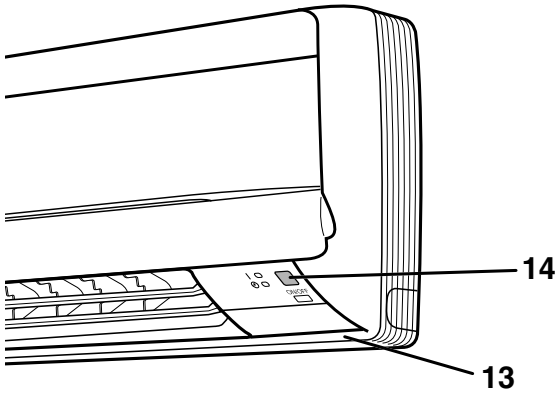
FT50/60CV1A

Names of parts

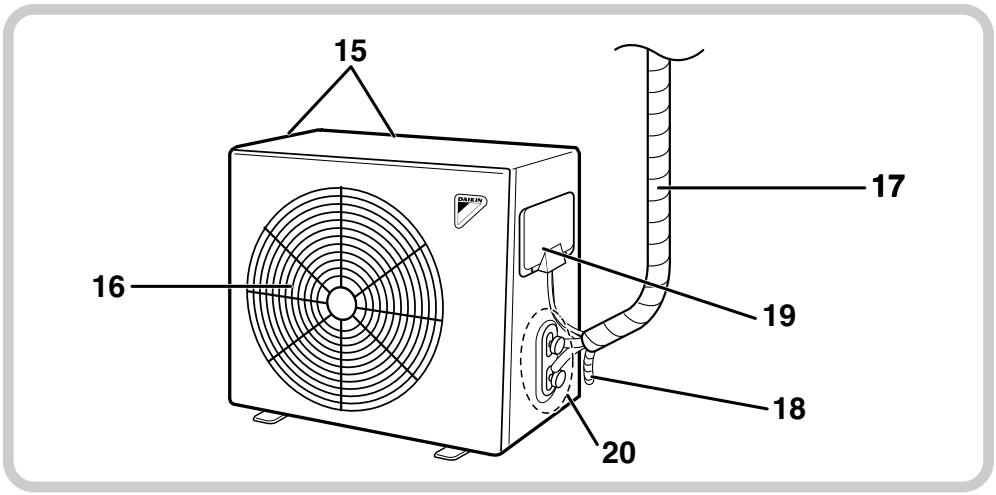
■ Indoor Unit



■ Main unit control panel



■ Outdoor Unit



■ Indoor Unit

1. **Air filter**
2. **Air purifying filter with photocatalytic deodorizing function:**
3. **Air inlet**
4. **Front grille**
5. **Grille tab**
6. **Display**
7. **Air outlet**
8. **Flaps (horizontal blades)**
9. **Louvers (vertical blades):**
   - The louvers are inside of the air outlet.
10. **OPERATION lamp (green)**
11. **TIMER lamp (yellow)**
12. **Indoor Unit ON/OFF switch:**
    - Push this switch once to start operation. Push once again to stop it.
    - The operation mode refers to the following table.

Mode	Temperature setting	Air flow rate
COOL	22°C	AUTO

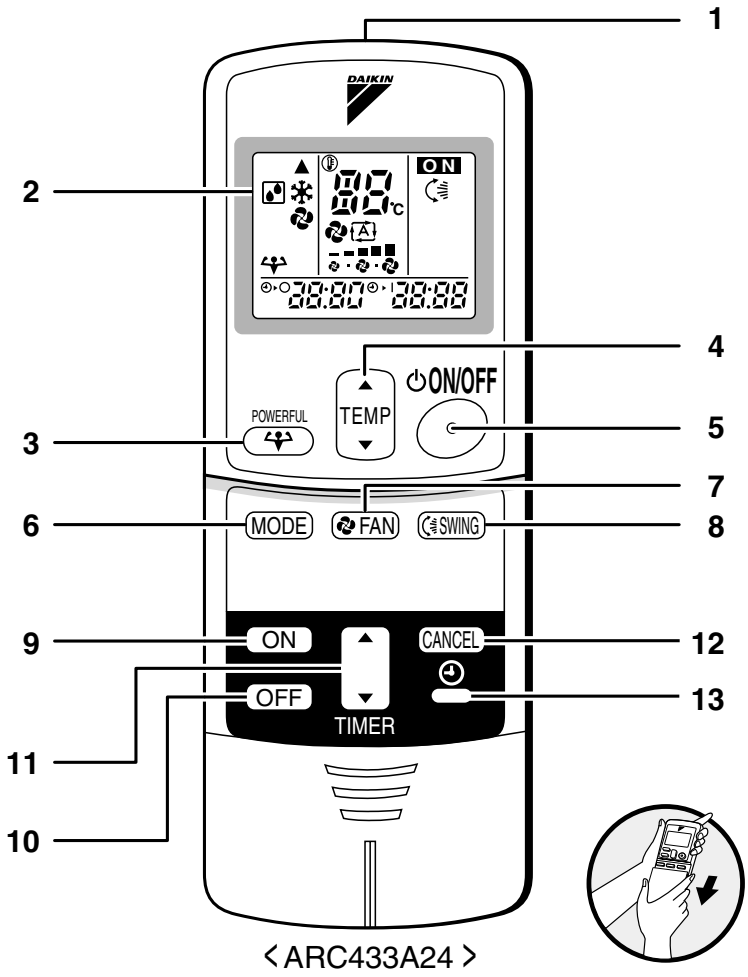
    - This switch is useful when the remote controller is missing.
13. **Room temperature sensor:**
    - It senses the air temperature around the unit.
14. **Signal receiver:**
    - It receives signals from the remote controller.
    - When the unit receives a signal, you will hear a short beep.
      - Operation start .....beep-beep
      - Settings changed.....beep
      - Operation stop .....beeeeep

■ Outdoor Unit

15. **Air inlet:** (Back and side)
16. **Air outlet**
17. **Refrigerant piping and inter-unit cable**
18. **Drain hose**
19. **Earth terminal:**
    - It is inside of this cover.
20. **Stop valve:**
    - Dew condensation may form on the stop valve during operation. This does not indicate any type of malfunction in the outdoor unit.

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



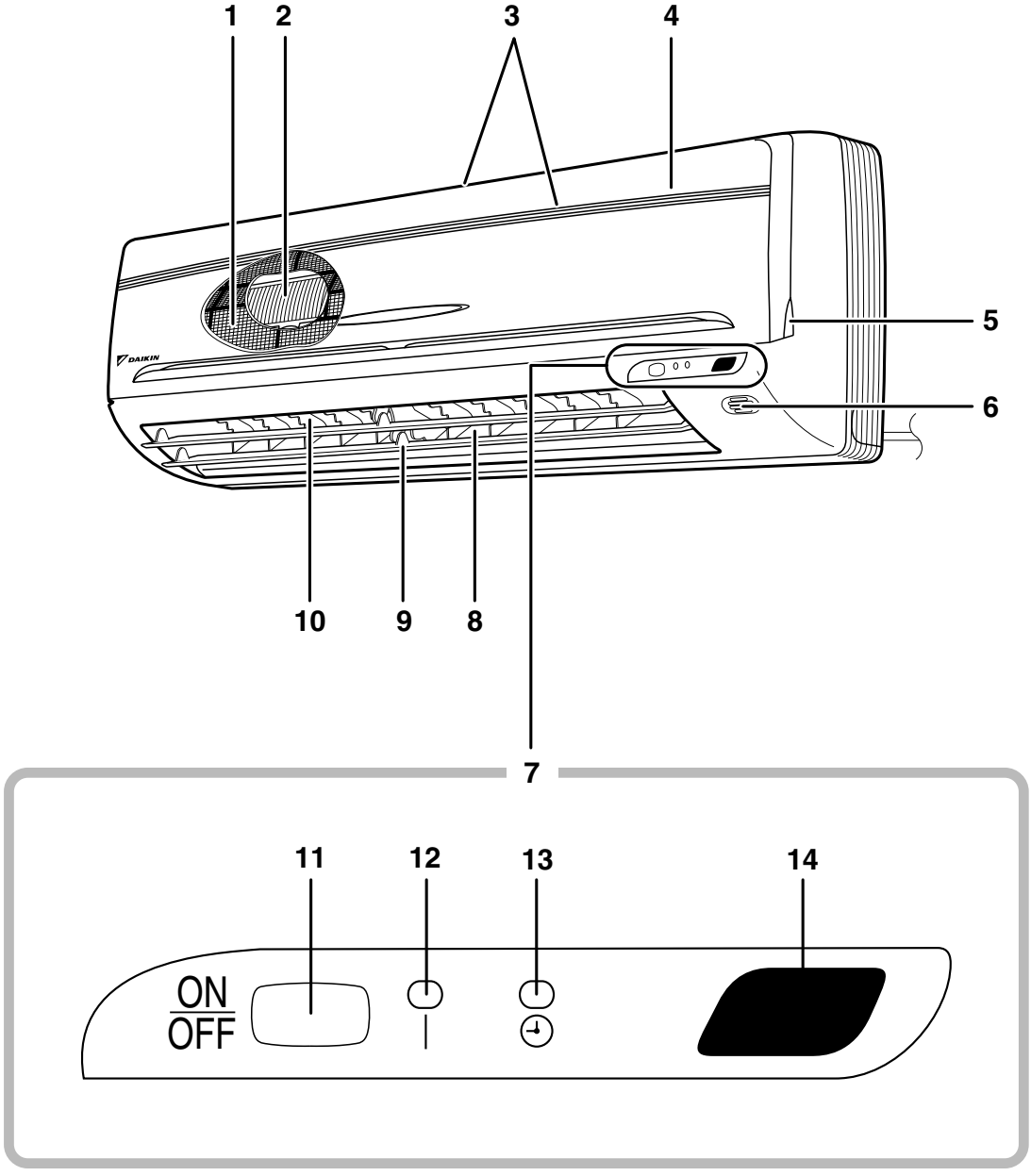
< ARC433A24 >

1. **Signal transmitter:**
   - It sends signals to the indoor unit.
2. **Display:**
   - It displays the current settings. (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. **POWERFUL button:**
   for POWERFUL operation
4. **TEMPERATURE adjustment button:**
   - It changes the temperature setting.
5. **ON/OFF button:**
   - Press this button once to start operation. Press once again to stop it.
6. **MODE selector button:**
   - It selects the operation mode. (DRY/COOL/FAN)
7. **FAN setting button:**
   - It selects the air flow rate setting.
8. **SWING button:**
   - Flap (Horizontal blade)
9. **ON TIMER button**
10. **OFF TIMER button**
11. **TIMER Setting button:**
    - It changes the time setting.
12. **TIMER CANCEL button:**
    - It cancels the timer setting.
13. **CLOCK button**

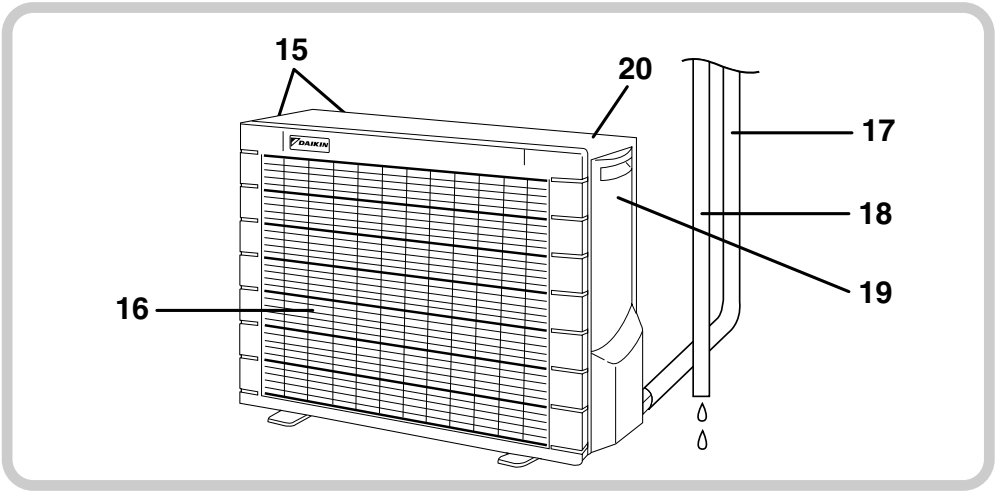
FTY25/35CVMA

Names of parts

■ Indoor Unit



■ Outdoor Unit



■ Indoor Unit

1. **Air filter**
2. **Air purifying filter with photocatalytic deodorizing function:**
   - These filters are attached to the inside of the air filters.
3. **Air inlet**
4. **Front grille**
5. **Grille tab**
6. **Room temperature sensor:**
   - It senses the air temperature around the unit.
7. **Display**
8. **Air outlet**
9. **Flaps (horizontal blades)**
10. **Louvers (vertical blades):**
    - The louvers are inside of the air outlet.
11. **Indoor Unit ON/OFF switch:**
    - Push this switch once to start operation. Push once again to stop it.
    - The operation mode refers to the following table.

Mode	Temperature setting	Air flow rate
AUTO	25°C	AUTO

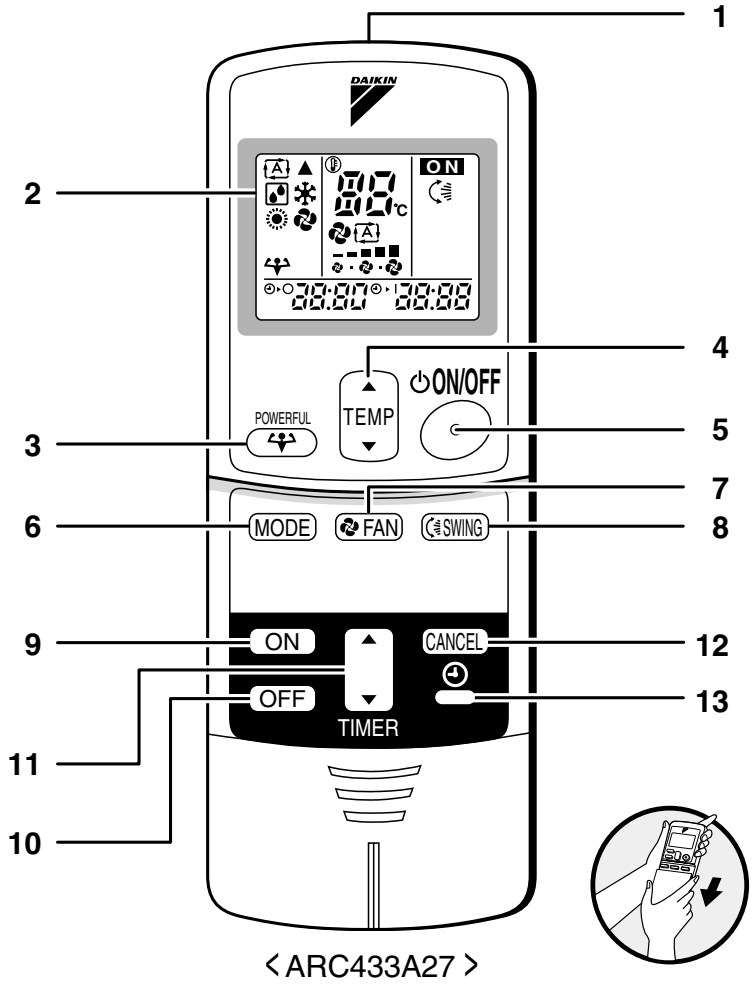
    - This switch is useful when the remote controller is missing.
12. **OPERATION lamp (green)**
13. **TIMER lamp (Yellow)**
14. **Signal receiver:**
    - It receives signals from the remote controller.
    - When the unit receives a signal, you will hear a short beep.
      - Operation start .....beep-beep
      - Settings changed.....beep
      - Operation stop .....beeeeep

■ Outdoor Unit

15. **Air inlet:** (Back and side)
16. **Air outlet**
17. **Refrigerant piping and inter-unit cable**
18. **Drain hose**
19. **Earth terminal:**
    - It is inside of this cover.
20. **Outside air temperature sensor:**
    - It senses the ambient temperature around the unit.

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



< ARC433A27 >

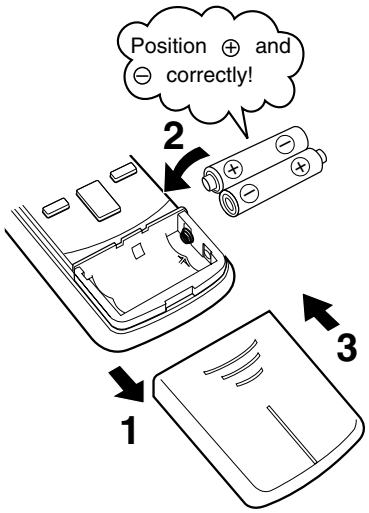
1. **Signal transmitter:**
   - It sends signals to the indoor unit.
2. **Display:**
   - It displays the current settings. (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. **POWERFUL button:**
   for POWERFUL operation
4. **TEMPERATURE adjustment button:**
   - It changes the temperature setting.
5. **ON/OFF button:**
   - Press this button once to start operation. Press once again to stop it.
6. **MODE selector button:**
   - It selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN)
7. **FAN setting button:**
   - It selects the air flow rate setting.
8. **SWING button**
9. **ON TIMER button**
10. **OFF TIMER button**
11. **TIMER Setting button:**
    - It changes the time setting.
12. **TIMER CANCEL button:**
    - It cancels the timer setting.
13. **CLOCK button**

2.4 Preparation before Operation

Preparation Before Operation

■ To set the batteries

1. **Press with a finger and slide the front cover to take it off.**
2. **Set two dry batteries (AAA).**
3. **Set the front cover as before.**



ATTENTION

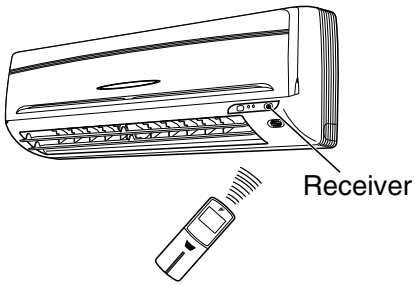
■ **About batteries**

- When replacing the batteries, use batteries of the same type, and replace the two old batteries together.
- When the system is not used for a long time, take the batteries out.
- We recommend replacing once a year, although if the remote controller display begins to fade or if reception deteriorates, please replace with new alkali batteries. Using manganese batteries reduces the lifespan.
- The attached batteries are provided for the initial use of the system.
  The usable period of the batteries may be short depending on the manufactured date of the air conditioner.

Preparation Before Operation

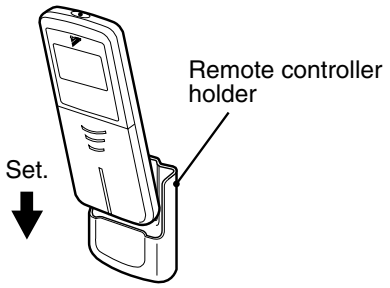
■ To operate the remote controller

- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is about 7 m.



■ To fix the remote controller holder on the wall

1. **Choose a place from where the signals reach the unit.**
2. **Fix the holder to a wall, a pillar, etc. with the screws supplied with the holder.**
3. **Place the remote controller in the remote controller holder.**



● To remove, pull it upwards.

ATTENTION

■ **About remote controller**

- Never expose the remote controller to direct sunlight.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult the shop if that is the case.
- If the remote control signals happen to operate another appliance, move that appliance to somewhere else, or consult the shop.

■ To set the clock

1. **Press "CLOCK button".**

   0:00 is displayed.

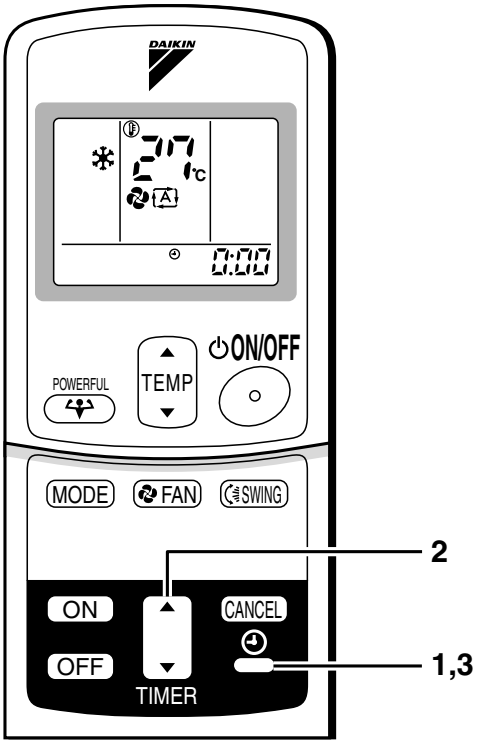
   ◷ blinks.

2. **Press "TIMER setting button" to set the clock to the present time.**

   Holding down " ▲ " or " ▼ " button rapidly increases or decreases the time display.

3. **Press "CLOCK button".**

   : blinks.



■ Turn the breaker ON

- Turning ON the breaker opens the flap, then closes it again. (This is a normal procedure.)

NOTE

■ Tips for saving energy

- Be careful not to cool (heat) the room too much.
  Keeping the temperature setting at a moderate level helps save energy.
- Cover windows with a blind or a curtain.
  Blocking sunlight and air from outdoors increases the cooling (heating) effect.
- Clogged air filters cause inefficient operation and waste energy. Clean them once in about every two weeks.

Recommended temperature setting
For cooling:26°C – 28°C For heating:20°C – 24°C

■ Please note

- The air conditioner always consumes 15-35 watts of electricity even while it is not operating.
- If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker OFF.
- Use the air conditioner in the following conditions.

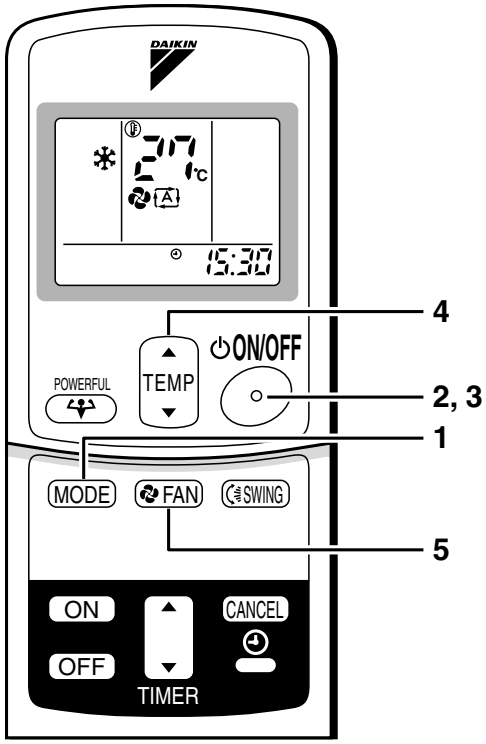
Mode	Operating conditions	If operation is continued out of this range
COOL	Outdoor temperature: 10 to 46 °C Indoor temperature: 18 to 32 °C Indoor humidity: 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.
HEAT	Outdoor temperature: –10 to 21 °C Indoor temperature: 10 to 30 °C	• A safety device may work to stop the operation.
DRY	Outdoor temperature: 10 to 46 °C Indoor temperature: 18 to 32 °C Indoor humidity: 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.

- Operation outside this humidity or temperature range may cause a safety device to disable the system.

2.5 AUTO • DRY • COOL • HEAT • FAN Operation

AUTO · DRY · COOL · HEAT · FAN Operation

The air conditioner operates with the operation mode of your choice.
From the next time on, the air conditioner will operate with the same operation mode.



■ To start operation

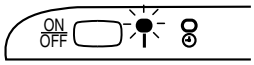
1. Press “MODE selector button” and select a operation mode.

- Each pressing of the button advances the mode setting in sequence.

: AUTO
: DRY
: COOL
: HEAT
: FAN

2. Press “ON/OFF button” .

- The OPERATION lamp lights up.



■ To stop operation

3. Press “ON/OFF button” again.

- Then OPERATION lamp goes off.

■ To change the temperature setting

4. Press “TEMPERATURE adjustment button”

DRY or FAN mode	AUTO or COOL or HEAT mode
The temperature setting is not variable.	Press “ ▲ ” to raise the temperature and press “ ▼ ” to lower the temperature.
	Set to the temperature you like.

■ To change the air flow rate setting

5. Press “FAN setting button”.

DRY mode	AUTO or COOL or HEAT or FAN mode
The air flow rate setting is not variable.	Five levels of air flow rate setting from “ ” to “ ” plus “ ” are available.

NOTE

■ **Note on HEAT operation**
- Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
- The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
- In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
- During defrosting operation, hot air does not flow out of indoor unit.

■ **Note on DRY operation**
- The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and fan strength, so manual adjustment of these functions is unavailable.

■ **Note on AUTO operation**
- In AUTO operation, the system selects an appropriate operation mode (COOL or HEAT) based on the room temperature at the start of the operation.
- The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
- If you do not like AUTO operation, you can manually select the operation mode and setting you like.

■ **Note on air flow rate setting**
- At smaller air flow rates, the cooling (heating) effect is also smaller.

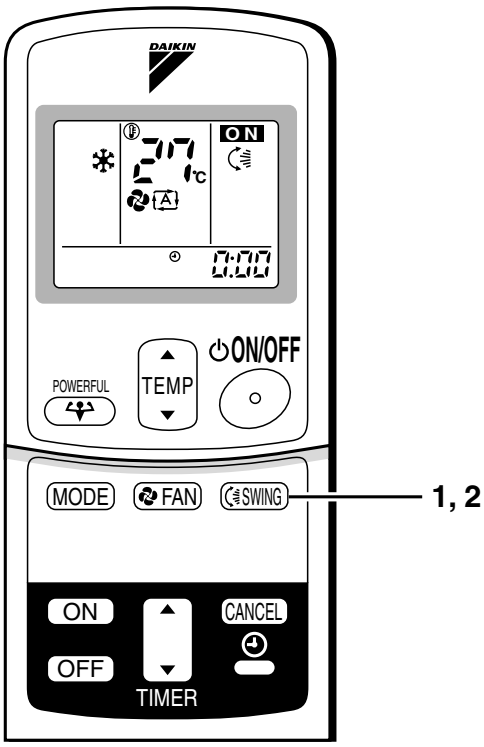
2.6 Adjusting the Air Flow Direction

Adjusting the Air Flow Direction

You can adjust the air flow direction to increase your comfort.

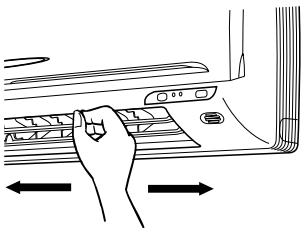
■ To adjust the horizontal blades (flaps)

1. **Press “SWING button”.**
   - “ ” is displayed on the LCD.
2. **When the flaps have reached the desired position, press “SWING button” once more.**
   The flaps will stop moving.



■ To adjust the vertical blades (louvers)

Hold the knob and move the louvers.
(You will find a knob on the left-side and the right-side blades.)

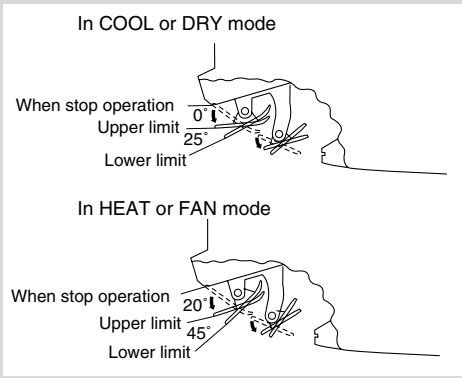


Notes on flaps and louvers angles

- When “ **SWING button** ” is selected, the flaps swinging range depends on the operation mode. (See the figure.)

■ **ATTENTION**

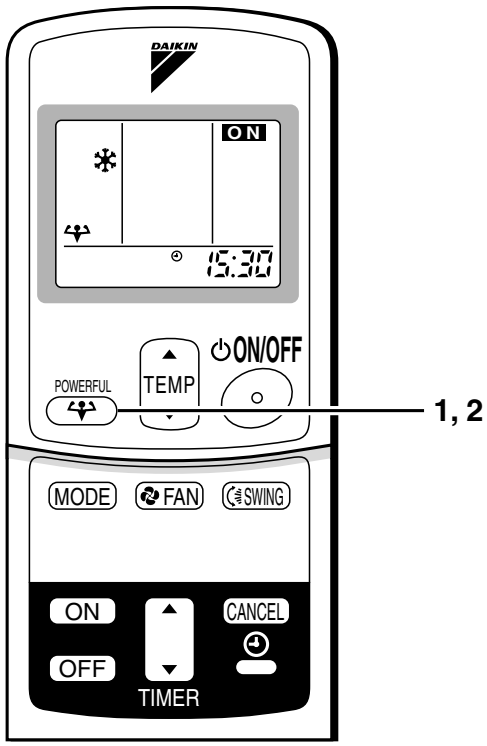
- Always use a remote controller to adjust the flaps angle. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Be careful when adjusting the louvers. Inside the air outlet, a fan is rotating at a high speed.



2.7 POWERFUL Operation

POWERFUL Operation

POWERFUL operation quickly maximizes the effect in any of the operation modes. Using POWERFUL operation you will get always the maximum efficiency.



■ To start POWERFUL operation

1. **Press “POWERFUL button”.**
   - POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
   - When using POWERFUL operation, there are some functions which are not available.
   - “” is displayed on the LCD.

■ To cancel POWERFUL operation

2. **Press “POWERFUL button” again.**

NOTE

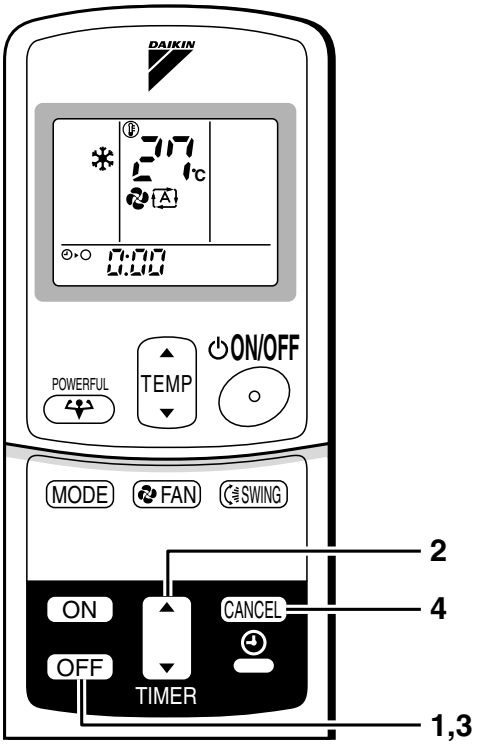
■ **Notes on POWERFUL operation**

- **In COOL and HEAT mode**
  To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the air flow rate be fixed to the maximum setting.
  The temperature and air flow settings are not variable.
- **In DRY mode**
  The temperature setting is lowered by 2.5°C and the air flow rate is slightly increased.
- **In FAN mode**
  The air flow rate is fixed to the maximum setting.

2.8 TIMER Operation

TIMER Operation

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.



■ To use OFF TIMER operation

- Check that the clock is correct. If not, set the clock to the present time. (page 9.)

1. Press “OFF TIMER button”.

0:00 is displayed.

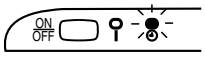
⏲ blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.

- Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “OFF TIMER button” again.

- The TIMER lamp lights up.



■ To cancel the OFF TIMER operation

4. Press “CANCEL button”.

- The TIMER lamp goes off.

Notes

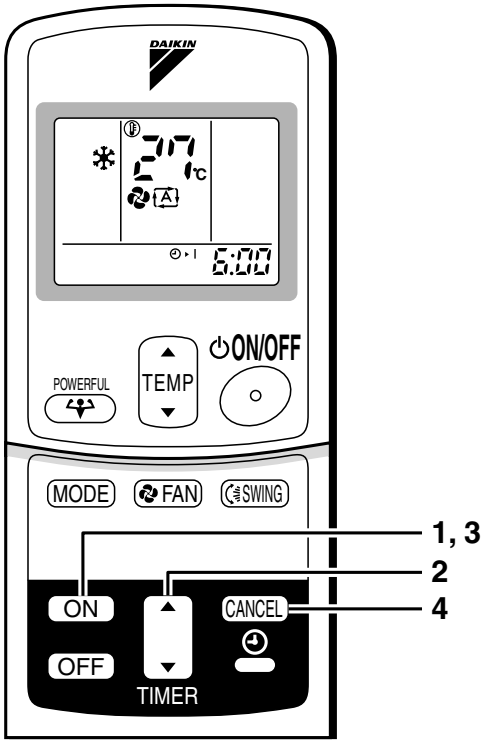
- When TIMER is set, the present time is not displayed.
- Once you set ON, OFF TIMER, the time setting is kept in the memory. (The memory is canceled when remote controller batteries are replaced.)
- When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user. (Maximum approx. 10 minutes)

■ NIGHT SET MODE

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.5°C up in COOL, 2.0°C down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.

■ To use ON TIMER operation

- Check that the clock is correct. If not, set the clock to the present time (page 9.).



1. Press “ON TIMER button”.

6:00 is displayed.

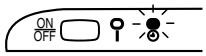
⏲▸| blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.

- Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “ON TIMER button” again.

- The TIMER lamp lights up.



■ To cancel ON TIMER operation

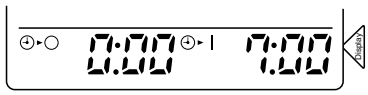
4. Press “CANCEL button”.

- The TIMER lamp goes off.

■ To combine ON TIMER and OFF TIMER

- A sample setting for combining the two timers is shown below.

(Example)
Present time: 11:00 PM
(The unit operating)
OFF TIMER at 0:00 a.m.
ON TIMER at 7:00 a.m.) Combined



ATTENTION

■ In the following cases, set the timer again.

- After a breaker has turned OFF.
- After a power failure.
- After replacing batteries in the remote controller.

2.9 Care and Cleaning

FT25/35CV1A, FTY25/35CVMA

Care and Cleaning

⚠ CAUTION Before cleaning, be sure to stop the operation and turn the breaker OFF.

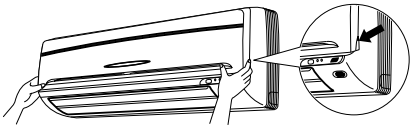
Units

■ Indoor unit, Outdoor unit and Remote controller

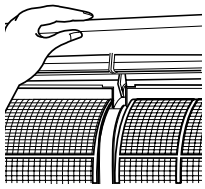
1. Wipe them with dry soft cloth.

■ Front grille

1. Open the front grille.
- Hold the grille by the tabs on the two sides and lift it unitl it stops with a click.

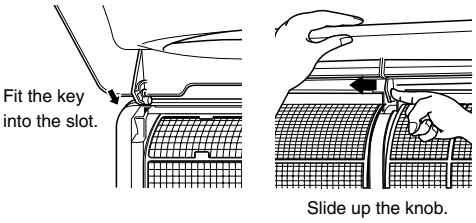


2. Remove the front grille.
- Supporting the front grille with one hand, release the lock by sliding down the knob with the other hand.
- To remove the front grille, pull it toward yourself with both hands.



3. Clean the front grille
- Wipe it with a soft cloth soaked in water.
- Only neutral detergent may be used.
- In case of washing the grille with water, dry it with cloth, dry it up in the shade after washing.

4. Attach the front grille
- Set the 3 keys of the front grille into the slots and push them in all the way.
- Close the front grille slowly and push the grille at the 3 points.
  (1 on each sides and 1 in the middle.)
- Check to see if the rotating axis in the upper center section is moving.

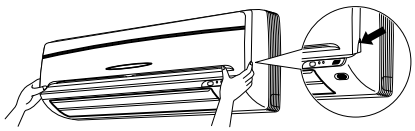


⚠ CAUTION

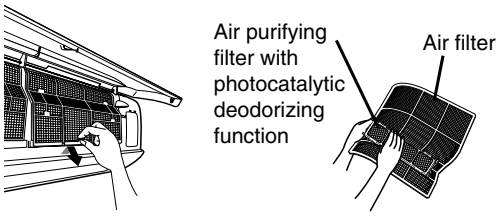
- Don't touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front grille, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front grille, support the grille securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 40 °C, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes, nor other hand stuff.
- After cleaning, make sure that the front grille is securely fixed.

Filters

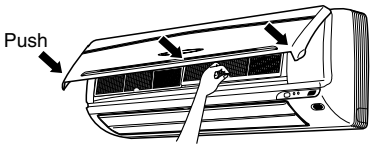
1. **Open the front grille.**
2. **Pull out the air filters.**
   - Push a little upwards the tab at the center of each air filter, then pull it down.



3. **Take off the air purifying filter with photocatalytic deodorizing function.**
   - Hold the recessed parts of the frame and unhook the four claws.

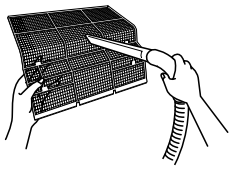


4. **Clean or replace each filter.**
   See below.
5. **Set the air filter and the air purifying filter with photocalytic deodorizing function as they were and close the front grille.**
   - Insert claws of the filters into slots of the front grille. Close the front grille slowly and push the grille at the 3 points. (1 on each sides and 1 in the middle.)

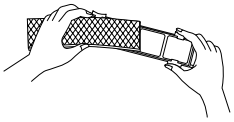


■ Air Filter

1. **Wash the air filters with water or clean them with vacuum cleaner.**
   - If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.
   - It is recommended to clean the air filters every two weeks.



■ Air purifying filter with photocatalytic deodorizing function. (gray)



The Air purifying filter with photocatalytic deodorizing function can be renewed by washing it with water once every 6 months. We recommend replacing it once every 3 years.

[Maintenance]

1. **Remove dust with a vacuum cleaner and wash lightly with water.**
2. **If it is very dirty, soak it for 10 to 15 minutes in water mixed with a neutral cleaning agent.**
3. **Do not remove filter from frame when washing with water.**
4. **After washing, shake off remaining water and dry in the shade.**
5. **Since the material is made out of paper, do not wring out the filter when removing water from it.**

[Replacement]

1. **Remove the tabs on the filter frame and replace with a new filter.**
   - Dispose of the old filter as flammable waste.

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the drain comes smoothly out of the drain hose during COOL or DRY operation. • If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

■ Before a long idle period

1. **Operate the "FAN only" for several hours on a fine day to dry out the inside.**
   - Press "MODE selector button" and select "FAN" operation.
   - Press "ON/OFF button" and start operation.
2. **After operation stops, turn off the breaker for the room air conditioner.**
3. **Clean the air filters and set them again.**
4. **Take out batteries from the remote controller.**

NOTE

- Operation with dirty filters:
  (1) cannot deodorize the air. (2) cannot clean the air.
  (3) the results in poor heating or cooling. (4) may cause odour.
- To order air purifying filter with photocatalytic deodorizing function contact to the service shop where you bought the air conditioner.
- Dispose of old filters as burnable waste.

Item	Part No.
Air purifying filter with photocatalytic deodorizing function. (with frame) 1 set	KAF918A43
Air purifying filter with photocatalytic deodorizing function. (without frame) 1 set	KAF918A44

FT50/60CV1A

Care and Cleaning

⚠ CAUTION **Before cleaning, be sure to stop the operation and turn the breaker OFF.**

Units

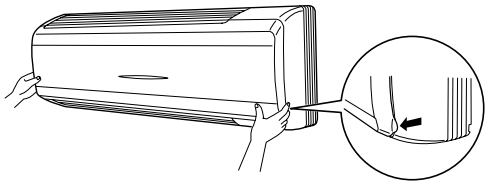
■ Indoor unit, Outdoor unit and Remote controller

1. Wipe them with dry soft cloth.

■ Front grille

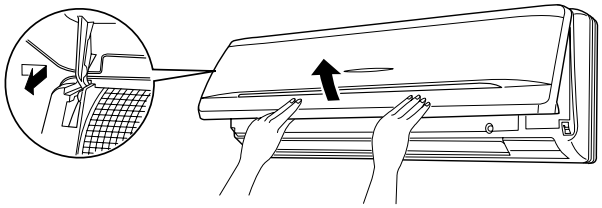
1. Open the front grille.

- Hold the grille by the tabs on the two sides and lift it until it stops with a click.



2. Remove the front grille.

- Open the front panel further while sliding it to either the left or right and pulling it toward you. This will disconnect the rotation dowel on one side. Then disconnect the rotation dowel on the other side in the same manner.

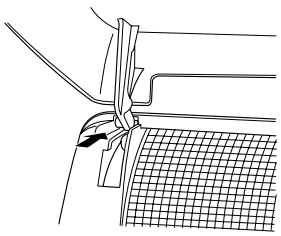


3. Clean the front grille

- Wipe it with a soft cloth soaked in water.
- Only neutral detergent may be used.
- In case of washing the grille with water, dry it with cloth, dry it up in the shade after washing.

4. Attach the front grille

- Align the rotation dowels on the left and right of the front panel with the slots, then push them all the way in.
- Close the front panel slowly. (Press the panel at both sides and the center.)

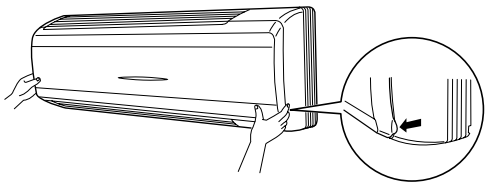


⚠ CAUTION

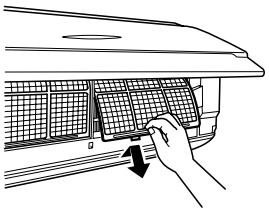
- Don't touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front grille, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front grille, support the grille securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 40 °C, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes, nor other hand stuff.
- After cleaning, make sure that the front grille is securely fixed.

Filters

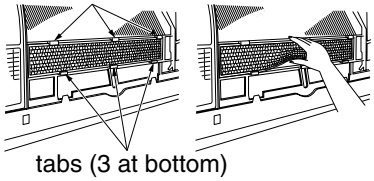
1. **Open the front grille.**
2. **Pull out the air filters.**
   - Push a little upwards the tab at the center of each air filter, then pull it down.



3. **Take off the air purifying filter with photocatalytic deodorizing function.**
   - Press the top of the air-cleaning filter onto the tabs (3 tabs at top). Then press the bottom of the filter up slightly, and press it onto the tabs (3 at bottom).

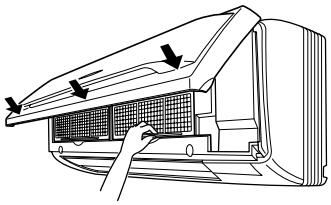


tabs (3 tabs at top)



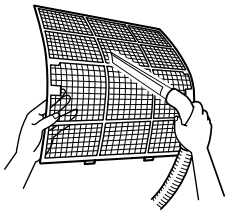
tabs (3 at bottom)

4. **Clean or replace each filter.**
   See below.
5. **Set the air filter and the air purifying filter with photocalytic deodorizing function as they were and close the front grille.**
   - Press the front panel at both sides and the center.



■ Air Filter

1. **Wash the air filters with water or clean them with vacuum cleaner.**
   - If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.
   - It is recommended to clean the air filters every two weeks.



■ Air purifying filter with photocatalytie deodorizing function. (gray)

The air purifying capacity of the photocatalytic purifying filter can be renewed by washing it with water once every 6 months. We recommend replacing it once every 3 years.

[Maintenance]

1. **Remove dust with a vacuum cleaner and wash lightly with water.**
2. **If it is very dirty, soak it for 10 to 15 minutes in water mixed with a neutral cleaning agent.**
3. **After washing, shake off remaining water and dry in the shade.**
4. **Since the material is made out of paper, do not wring out the filter when removing water from it.**

[Replacement]

1. **Remove the tabs on the filter frame and replace with a new filter.**
   - Dispose of the old filter as flammable waste.

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the drain comes smoothly out of the drain hose during COOL or DRY operation. • If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

■ Before a long idle period

1. **Operate the "FAN only" for several hours on a fine day to dry out the inside.**
   - Press "MODE selector button" and select "FAN" operation.
   - Press "ON/OFF button" and start operation.
2. **After operation stops, turn off the breaker for the room air conditioner.**
3. **Clean the air filters and set them again.**
4. **Take out batteries from the remote controller.**

NOTE

- Operation with dirty filters:
  (1) cannot deodorize the air. (2) cannot clean the air.
  (3) the results in poor cooling. (4) may cause odour.
- To order air purifying filter with photocatalytic deodorizing function contact to the service shop where you bought the air conditioner.
- Dispose of old filters as burnable waste.

Item	Part No.
Air purifying filter with photocatalytie deodorizing function. (without frame) 1 set	KAF952A42

2.10 Troubleshooting

Trouble Shooting

These cases are not troubles.

The following cases are not air conditioner troubles but have some reasons. You may just continue using it.

Case	Explanation
Operation does not start soon. • When ON/OFF button was pressed soon after operation was stopped. • When the mode was reselected.	• This is to protect the air conditioner. You should wait for about 3 minutes.
Hot air does not flow out soon after the start of heating operation.	• The air conditioner is warming up. You should wait for 1 to 4 minutes. (The system is designed to start discharging air only after it has reached a certain temperature.)
The heating operation stops suddenly and a flowing sound is heard.	• The system is taking away the frost on the outdoor unit. You should wait for about 3 to 8 minutes.
The outdoor unit emits water or steam.	■ In HEAT mode • The frost on the outdoor unit melts into water or steam when the air conditioner is in defrost operation. ■ In COOL or DRY mode • Moisture in the air condenses into water on the cool surface of outdoor unit piping and drips.
Mists come out of the indoor unit.	■ This happens when the air in the room is cooled into mist by the cold air flow during cooling operation.
The indoor unit gives out odour.	■ This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the air flow. (If this happens, we recommend you to have the indoor unit washed by a technician. Consult the service shop where you bought the air conditioner.)
The outdoor fan rotates while the air conditioner is not in operation.	■ After operation is stopped: • The outdoor fan continues rotating for another 60 seconds for system protection. ■ While the air conditioner is not in operation: • When the outdoor temperature is very high, the out door fan starts rotating for system protection.
The operation stopped suddenly. (OPERATION lamp is on)	■ For system protection, the air conditioner may stop operating on a sudden large voltage fluctuation. It automatically resumes operation in about 3 minutes.

Check again.

Please check again before calling a repair person.

Case	Check
The air conditioner does not operate. (OPERATION lamp is off)	• Hasn't a breaker turned OFF or a fuse blown? • Isn't it a power failure? • Are batteries set in the remote controller? • Is the timer setting correct?
Cooling (Heating) effect is poor.	• Are the air filters clean? • Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? • Is the temperature setting appropriate? • Are the windows and doors closed? • Are the air flow rate and the air direction set appropriately?
Operation stops suddenly. (OPERATION lamp flashes.)	• Are the air filters clean? • Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? Clean the air filters or take all obstacles away and turn the breaker OFF. Then turn it ON again and try operating the air conditioner with the remote controller. If the lamp still flashes, call the service shop where you bought the air conditioner.
An abnormal functioning happens during operation.	• The air conditioner may malfunction with lightning or radio waves. Turn the breaker OFF, turn it ON again and try operating the air conditioner with the remote controller.

Call the service shop immediately.

⚠ WARNING

■When an abnormality (such as a burning smell) occurs, stop operation and turn the breaker OFF.
Continued operation in an abnormal condition may result in troubles, electric shocks or fire.
Consult the service shop where you bought the air conditioner.

■Do not attempt to repair or modify the air conditioner by yourself.
Incorrect work may result in electric shocks or fire.
Consult the service shop where you bought the air conditioner.

If one of the following symptoms takes place, call the service shop immediately.

- **The power cord is abnormally hot or damaged.**
- **An abnormal sound is heard during operation.**
- **The safety breaker, a fuse, or the earth leakage breaker cuts off the operation frequently.**
- **A switch or a button often fails to work properly.**
- **There is a burning smell.**
- **Water leaks from the indoor unit.**

▶ Turn the breaker OFF and call the service shop.

■ After a power failure The air conditioner automatically resumes operation in about 3 minutes. You should just wait for a while.	■ Lightning If lightning may strike the neighbouring area, stop operation and turn the breaker OFF for system protection.

We recommend periodical maintenance

In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact the service shop where you bought the air conditioner.
The maintenance cost must be born by the user.

Part 6
Service Diagnosis

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1. Troubleshooting by Lamps

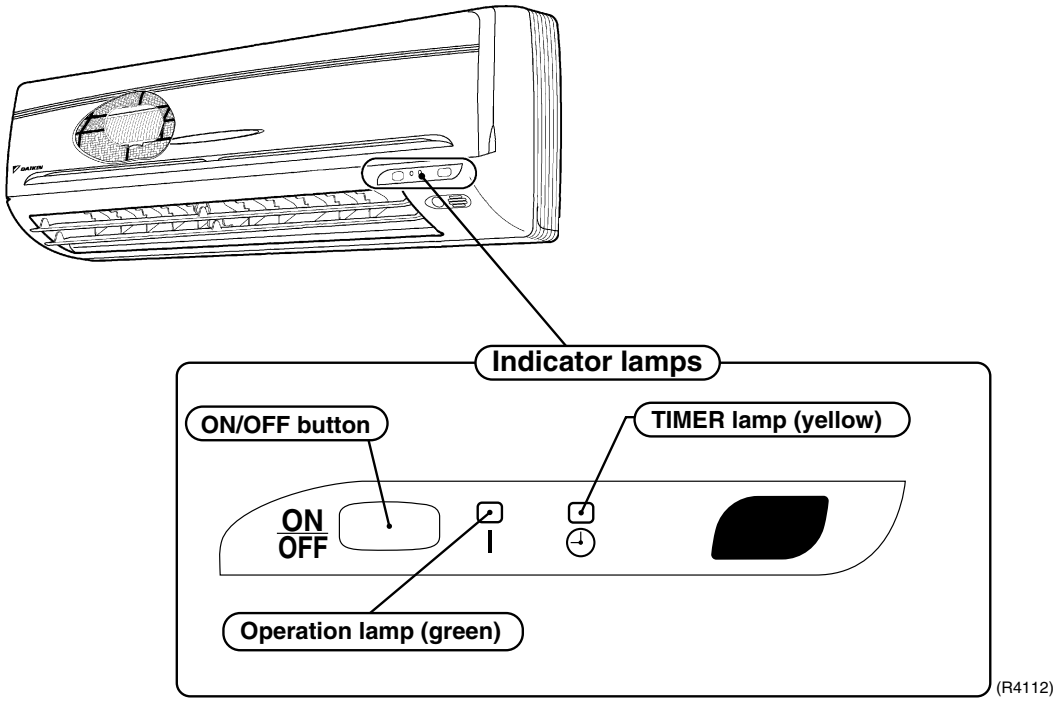
Operation Lamp

The operation lamp flashes when any of the following errors is detected.

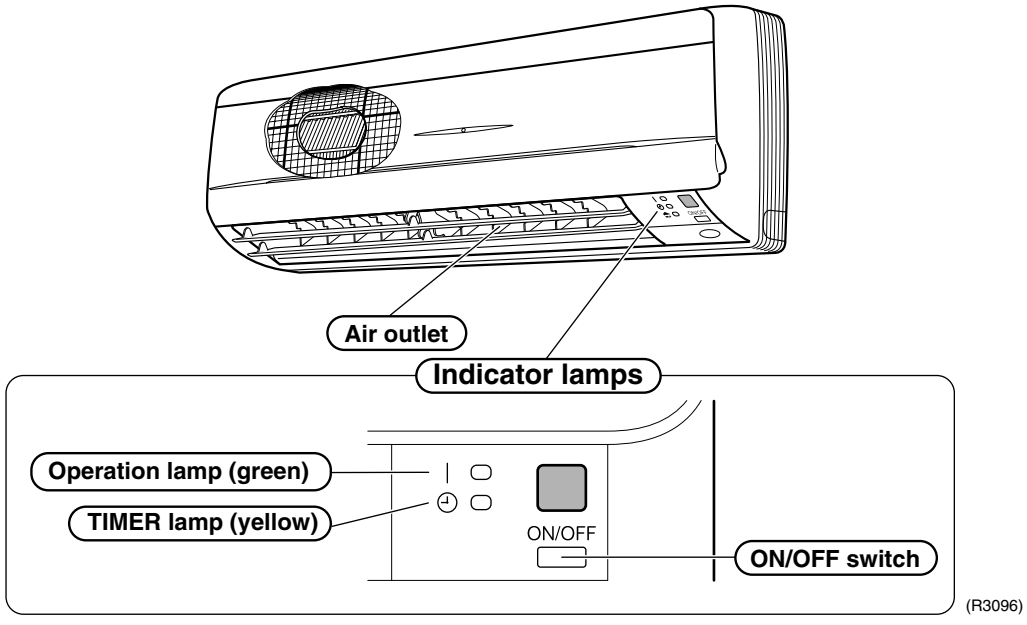
1. When a protection device of the indoor or outdoor unit is activated or when the thermistor malfunctions, disabling equipment operation.
2. When a signal transmission error occurs between the indoor and outdoor units.

In either case, conduct the diagnostic procedure described in the following pages.

FT25/35CV1A, FTY25/35CVMA



FT50/60CV1A



LED Indication

The outdoor unit has one green LED (LEDA) on the PCB. The flashing green LED indicates normal condition of microcomputer operation.

2. Problem and Solution

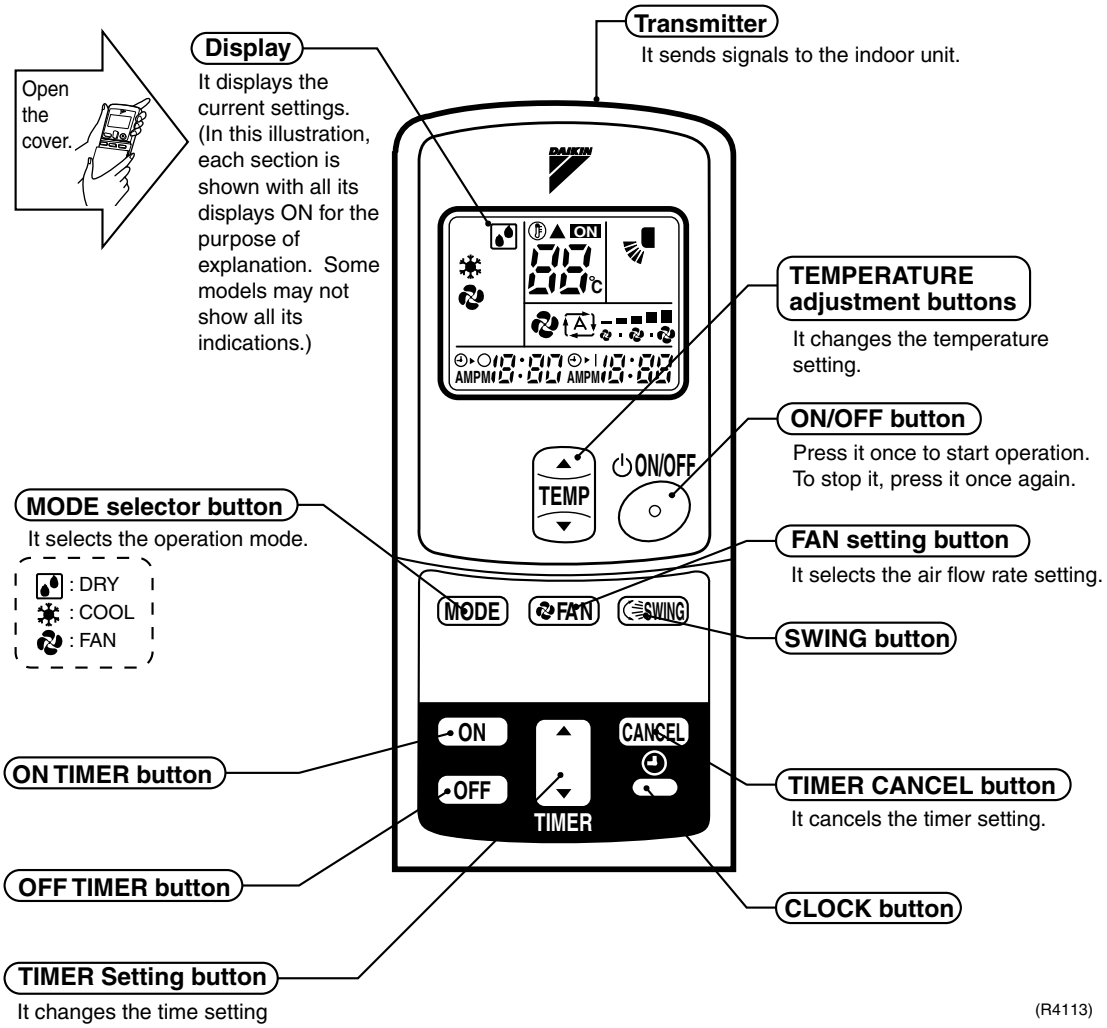
Problem	Check	Solution	Reference Page
None of the units operates.	Check the power supply.	Check to make sure that the rated voltage is supplied.	—
	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Check the outdoor air temperature.	Heating operation cannot be used when the outdoor air temperature is 21°C or higher, and cooling operation cannot be used when the outdoor air temperature is below 10°C (19.4°C for cooling only model).	—
	Diagnosis with remote controller indication	—	86
	Check the remote controller addresses.	Check to make sure that address settings for the remote controller and indoor unit are correct.	—
Operation sometimes stops.	Check the power supply.	A power failure of 2 to 10 cycles can stop air conditioner operation. (Operation lamp OFF)	—
	Check the outdoor air temperature.	Heating operation cannot be used when the outdoor air temperature is 21°C or higher, and cooling operation cannot be used when the outdoor air temperature is below 10°C (19.4°C for cooling only model).	—
	Diagnosis with remote controller indication	—	86
Equipment operates but does not cool, or does not heat (only for heat pump model).	Check for wiring and piping errors in the indoor and outdoor units connection wires and pipes.	Conduct the wiring/piping error check described on the product diagnosis nameplate.	—
	Check for thermistor detection errors.	Check to make sure that the main unit's thermistor has not dismounted from the pipe holder.	—
	Check for faulty operation of the electronic expansion valve.	Set the units to cooling operation, and compare the temperatures of the liquid side connection pipes of the connection section among rooms to check the opening and closing operation of the electronic expansion valves of the individual units.	—
	Diagnosis with remote controller indication	—	86
	Diagnosis by service port pressure and operating current	Check for insufficient gas.	120
Large operating noise and vibrations	Check the output voltage of the power transistor.	—	121
	Check the power transistor.	—	—
	Check the installation condition.	Check to make sure that the required spaces for installation (specified in the Technical Guide, etc.) are provided.	—

3. Service Check Function

3.1 ARC423 Series Remote Controller

The temperature display sections on the main unit indicate corresponding codes.

1. When the timer cancel button is held down for 5 seconds, a “00” indication flashes on the temperature display section.



(R4113)

2. Press the timer cancel button repeatedly until a continuous beep is produced.

■ The code indication changes in the sequence shown below, and notifies with a long beep.

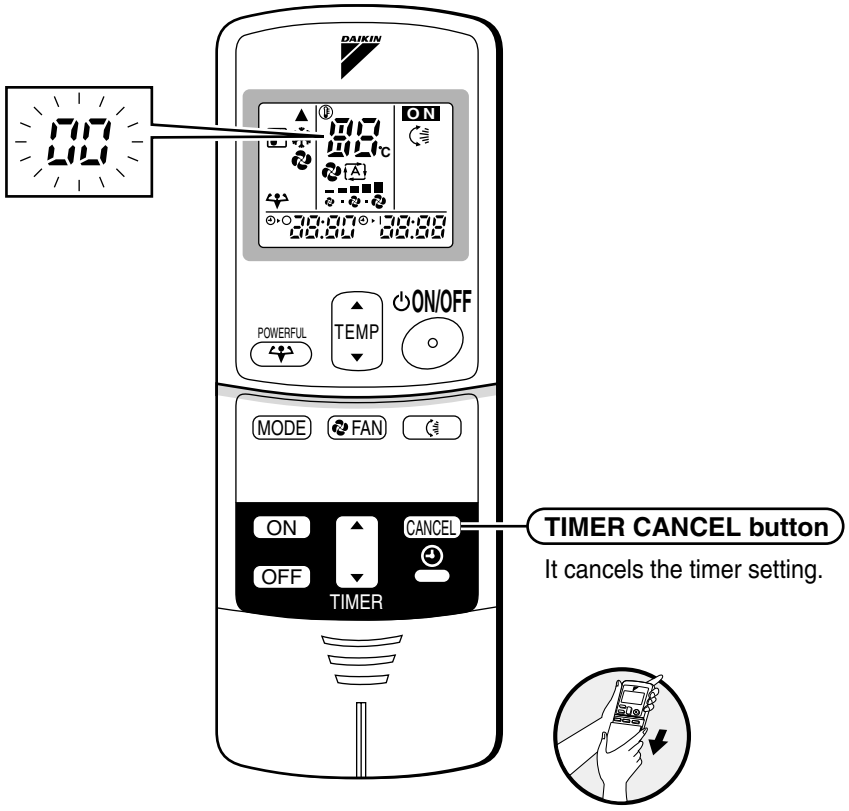
No.	Code	No.	Code	No.	Code
1	00	11	E7	21	UA
2	U4	12	C7	22	A5
3	F3	13	H8	23	J9
4	E6	14	J3	24	E8
5	L5	15	A3	25	P4
6	A6	16	A1	26	L3
7	E5	17	C4	27	L4
8	LC	18	C5	28	H6
9	C9	19	H9	29	H7
10	U0	20	J6	30	U2

Note:
1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.

3.2 ARC433 Series Remote Controller

The temperature display sections on the main unit indicate corresponding codes.

1. When the timer cancel button is held down for 5 seconds, a "00" indication flashes on the temperature display section.



(R4114)

2. Press the timer cancel button repeatedly until a continuous beep is produced.

■ The code indication changes in the sequence shown below, and notifies with a long beep.

No.	Code	No.	Code	No.	Code
1	00	11	E7	21	UA
2	U4	12	C7	22	A5
3	F3	13	H8	23	J9
4	E6	14	J3	24	E8
5	L5	15	A3	25	P4
6	A6	16	A1	26	L3
7	E5	17	C4	27	L4
8	LC	18	C5	28	H6
9	C9	19	H9	29	H7
10	U0	20	J6	30	U2

Note:

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.

4. Troubleshooting

4.1 Error Codes

	Code	Description		Reference Page
System	00	Normal		—
	U0★	Insufficient gas		113
	U4	Signal transmission error (between indoor and outdoor units)		95
Indoor Unit	A1	Indoor unit PCB abnormality		87
	A5	Freeze-up protection control or high pressure control		88
	A6	Fan motor or related abnormality	AC motor	90
			DC motor	91
	C4	Heat exchanger thermistor abnormality		93
	C9	Room temperature thermistor abnormality		93
	*	Indoor unit PCB abnormality		94
Outdoor Unit	E5★	OL activation (compressor overload)		96
	E6★	Compressor lock		97
	E8	Input over current detection		98
	EA	Four way valve abnormality		99
	F6	High pressure control in cooling		101
	H8	CT or related abnormality		103
	H9	Outdoor air thermistor or related abnormality		105
	J6	Heat exchanger thermistor or related abnormality		105
	L3	Electrical box temperature rise		107
	L4	Radiation fin temperature rise		109
	L5	Output over current detection		111
	P4	Radiation fin thermistor or related abnormality		105

★: Displayed only when system-down occurs.

4.2 Indoor Unit PCB Abnormality (A1)

Remote Controller Display

A1

Method of Malfunction Detection

Evaluation of zero-cross detection of power supply by indoor unit.

Malfunction Decision Conditions

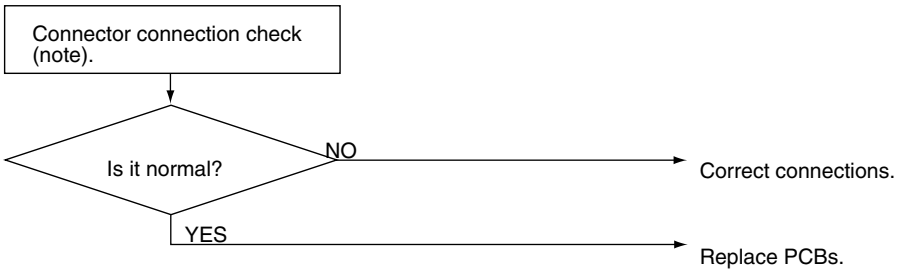
When there is no zero-cross detection in approximately 10 continuous seconds.

Supposed Causes

- Faulty indoor unit PCB
- Faulty connector connection

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R1400)

Note: Connector Nos. vary depending on models.

Model Type	Connector No.
All indoor units	Terminal strip~Control PCB

4.3 Freeze-up Protection Control or High Pressure Control (A5)

Remote Controller Display

A5

Method of Malfunction Detection

- High pressure control (heat pump model only)
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is used for the high pressure control (stop, outdoor fan stop, etc.)
- Freeze-up protection control (operation halt) is activated during cooling operation according to the temperature detected by the indoor unit heat exchanger thermistor.

Malfunction Decision Conditions

- High pressure control
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is above 65°C
- Freeze-up protection
  When the indoor unit heat exchanger temperature is below 0°C during cooling operation.

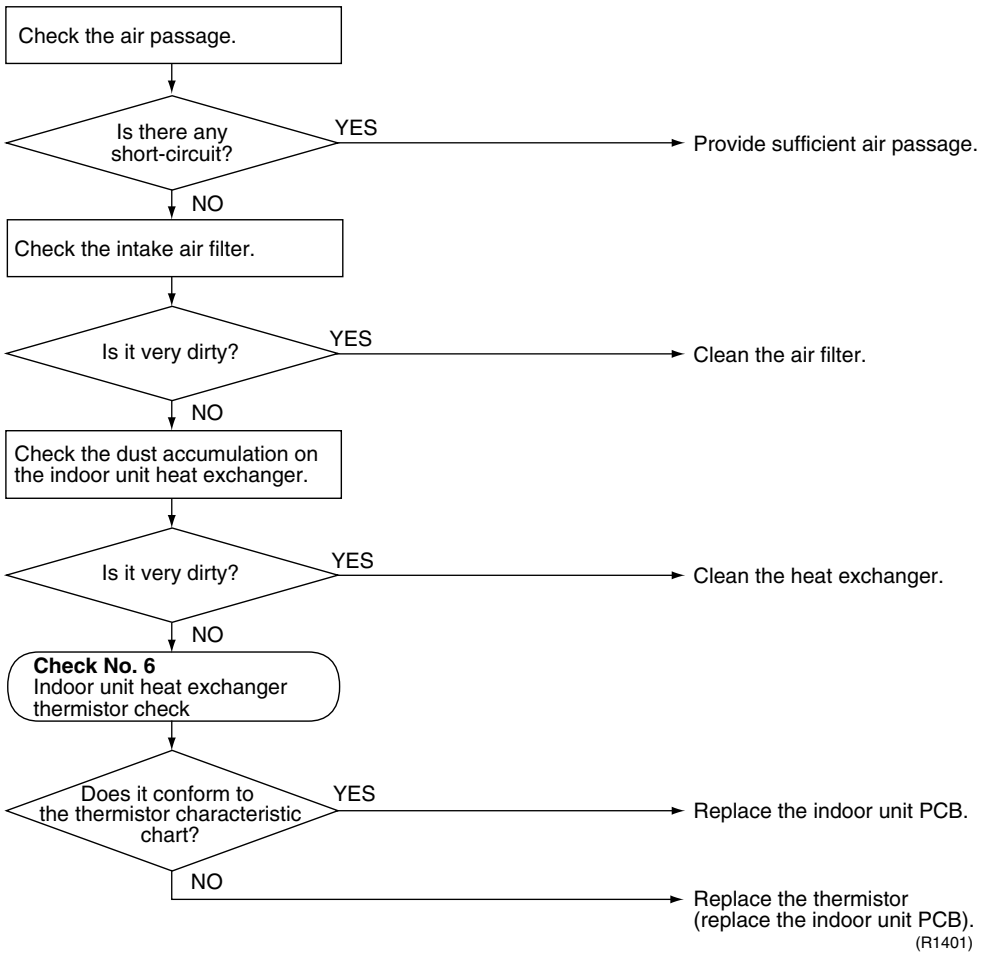
Supposed Causes

- Operation halt due to clogged air filter of the indoor unit.
- Operation halt due to dust accumulation on the indoor unit heat exchanger.
- Operation halt due to short-circuit.
- Detection error due to faulty indoor unit heat exchanger thermistor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting

Check No.6
Refer to P.116

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(R1401)

4.4 Fan Motor or Related Abnormality(A6)

4.4.1 AC motor (FT25/35CV1A, FTY25/35CVMA)

Remote Controller Display

A6

Method of Malfunction Detection

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

Malfunction Decision Conditions

When the detected rotation speed is less than 50% of the HH tap under maximum fan motor rotation demand.

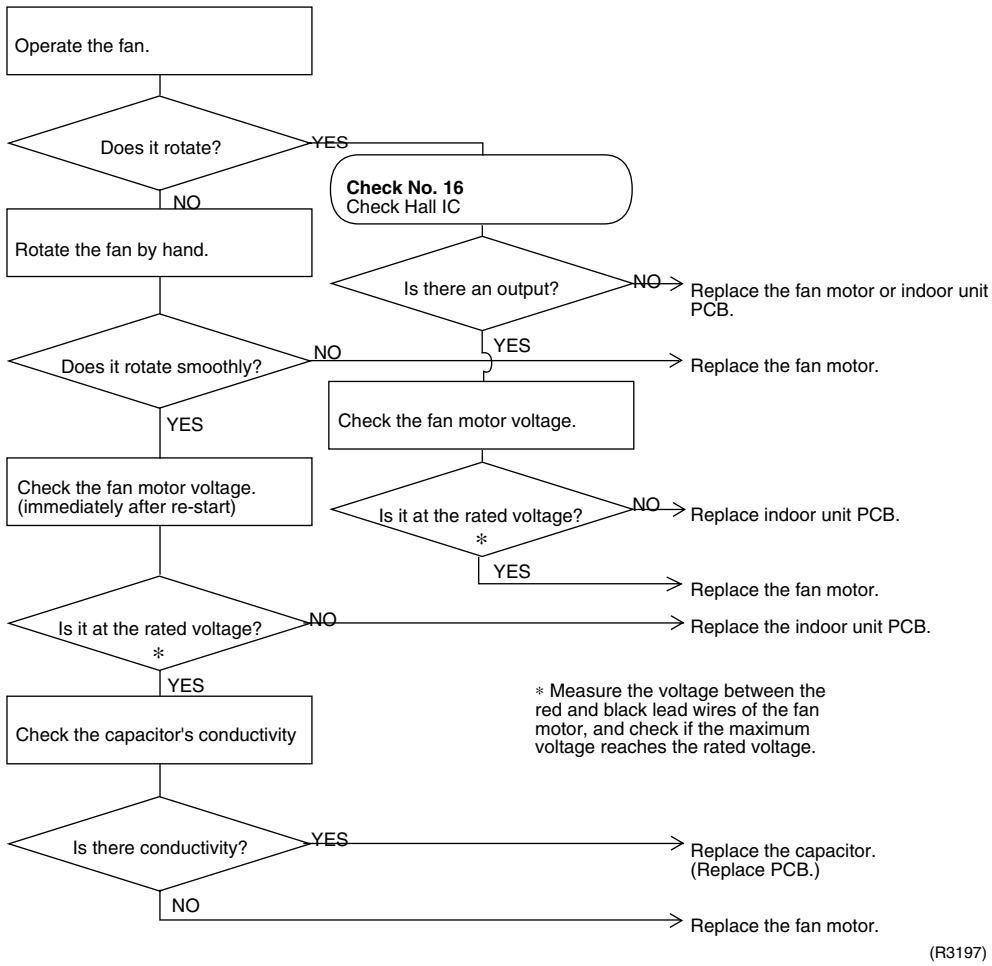
Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting

Check No.16
Refer to P.122

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.4.2 DC Motor (FT50/60CV1A)

Remote Controller Display

A6

Method of Malfunction Detection

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

Malfunction Decision Conditions

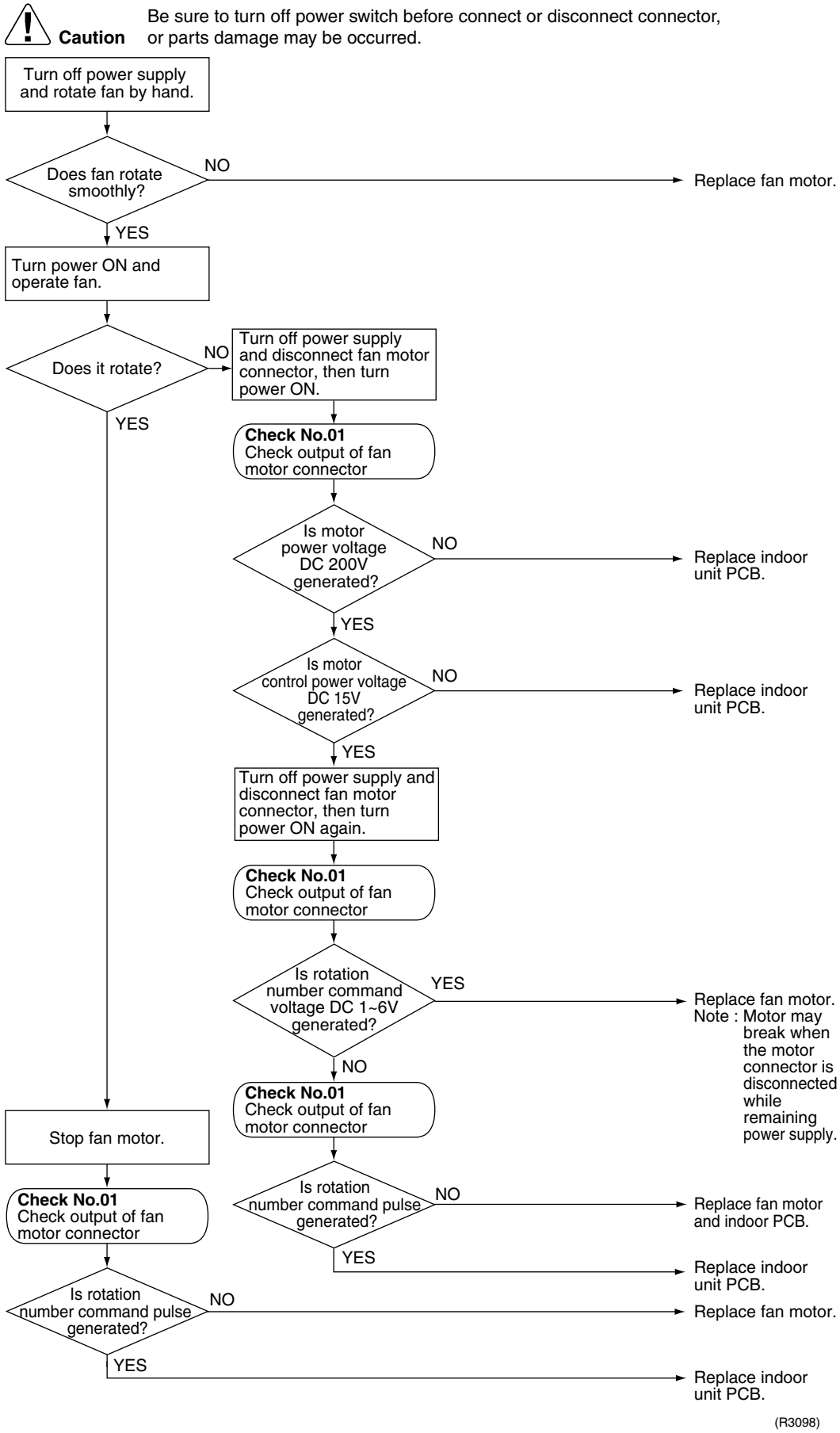
When the detected rotation speed is less than 50% of the H tap under maximum fan motor rotation demand.

Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting

Check No.01
Refer to P.115


Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.
Turn off power supply and rotate fan by hand.
Does fan rotate smoothly?
NO
Replace fan motor.
YES
Turn power ON and operate fan.
Does it rotate?
NO
Turn off power supply and disconnect fan motor connector, then turn power ON.
YES
Check No.01 Check output of fan motor connector
Is motor power voltage DC 200V generated?
NO
Replace indoor unit PCB.
YES
Is motor control power voltage DC 15V generated?
NO
Replace indoor unit PCB.
YES
Turn off power supply and disconnect fan motor connector, then turn power ON again.
Check No.01 Check output of fan motor connector
Is rotation number command voltage DC 1~6V generated?
YES
Replace fan motor.
Note : Motor may break when the motor connector is disconnected while remaining power supply.
NO
Check No.01 Check output of fan motor connector
Stop fan motor.
Is rotation number command pulse generated?
NO
Replace fan motor and indoor PCB.
YES
Replace indoor unit PCB.
Check No.01 Check output of fan motor connector
Is rotation number command pulse generated?
NO
Replace fan motor.
YES
Replace indoor unit PCB.
(R3098)

4.5 Thermistor or Related Abnormality (Indoor Unit) (C4,C9)

Remote Controller Display

C4, C9

Method of Malfunction Detection

The temperatures detected by the thermistors are used to determine thermistor errors.

Malfunction Decision Conditions

When the thermistor input is more than 4.96 V or less than 0.04 V during compressor operation*.
* (reference)
When above about 212°C(less than 120 ohms) or below about –50°C (more than 1,860 kohms).

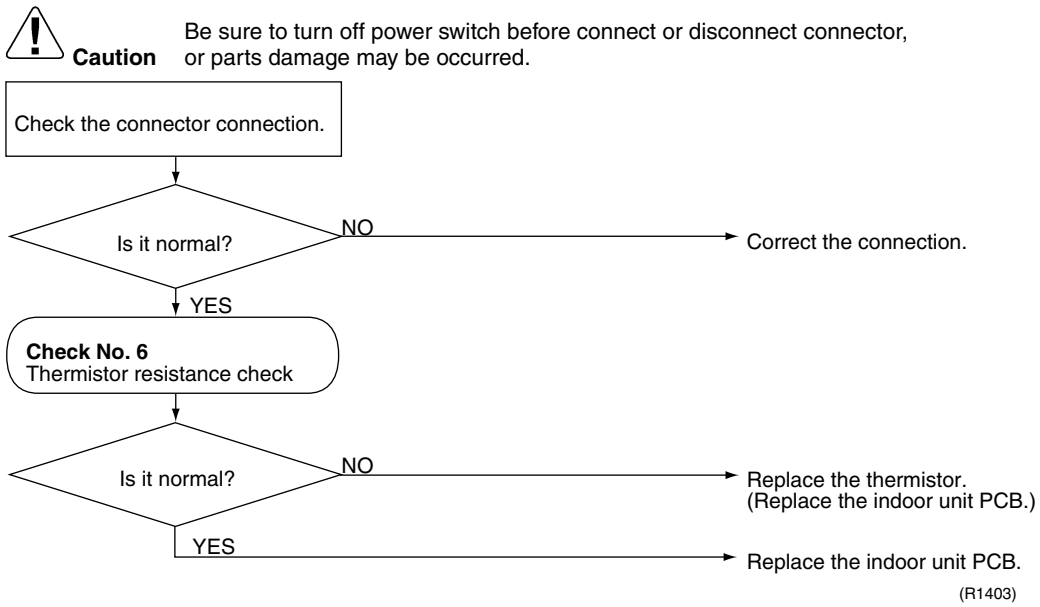
Note: The values vary slightly in some models.

Supposed Causes

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

Troubleshooting

Check No.6
Refer to P.116



C4 : Indoor heat exchanger thermistor
C9 : Room temperature thermistor

4.6 Indoor Unit PCB Abnormality

Remote Controller Display

*

Method of Malfunction Detection

The proper programme operation of the microcomputer is checked by the programme.

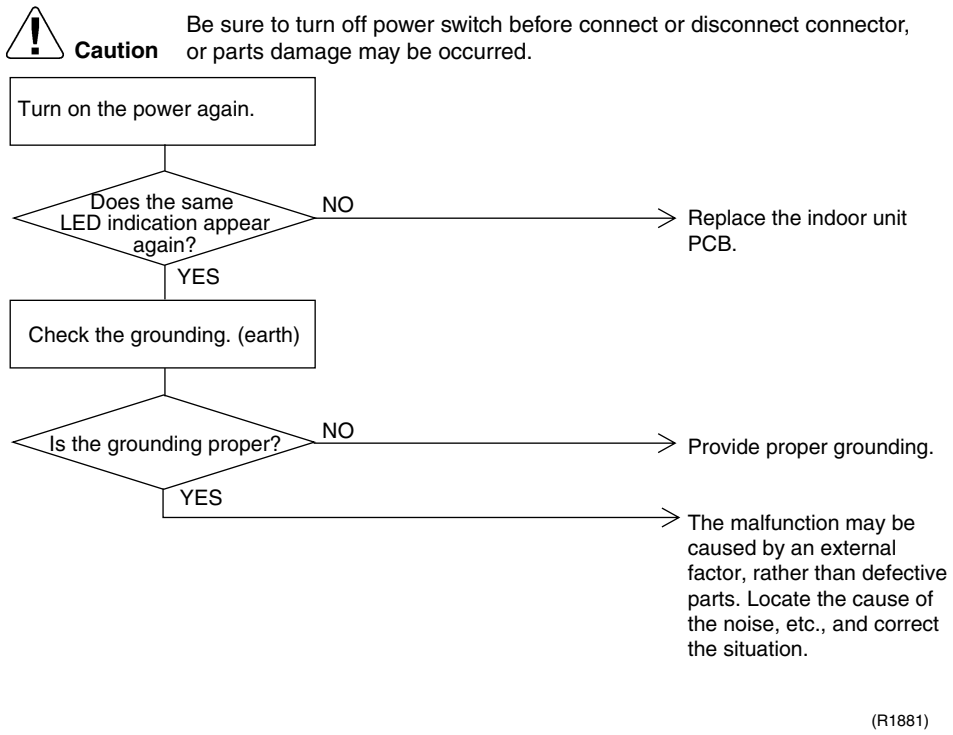
Malfunction Decision Conditions

When the microcomputer programme does not function properly.

Supposed Causes

- Microcomputer programme is in abnormal condition due to an external factor.
  *Noise
  *Momentary voltage drop.
  *Momentary power failure, etc.
- Faulty indoor unit PCB.

Troubleshooting


Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.
Turn on the power again.
Does the same LED indication appear again?
NO
Replace the indoor unit PCB.
YES
Check the grounding. (earth)
Is the grounding proper?
NO
Provide proper grounding.
YES
The malfunction may be caused by an external factor, rather than defective parts. Locate the cause of the noise, etc., and correct the situation.

(R1881)

4.7 Signal Transmission Error (between Indoor and Outdoor Units) (U4)

Remote Controller Display

U4

Method of Malfunction Detection

The data received from the outdoor unit in indoor unit-outdoor unit signal transmission is checked whether it is normal.

Malfunction Decision Conditions

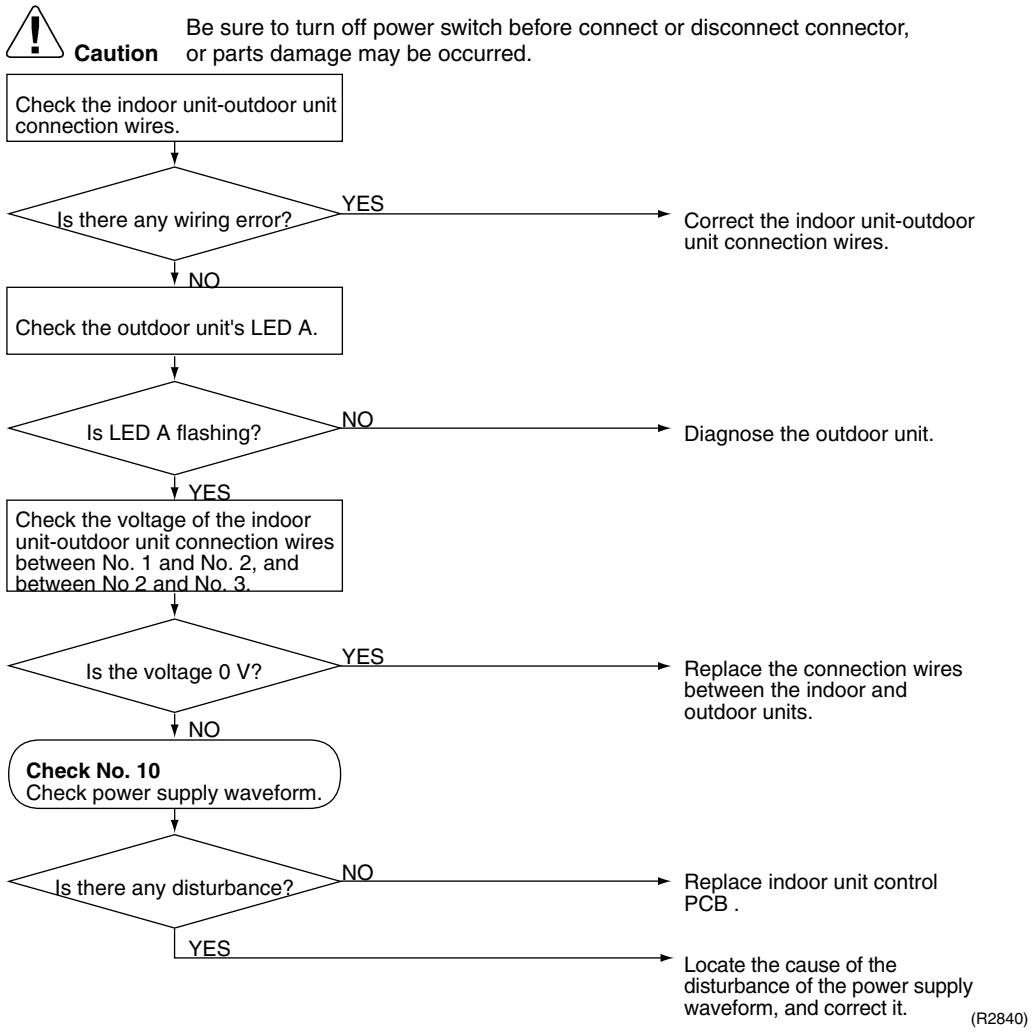
When the data sent from the outdoor unit cannot be received normally, or when the content of the data is abnormal.

Supposed Causes

- Faulty outdoor unit PCB.
- Faulty indoor unit PCB.
- Indoor unit-outdoor unit signal transmission error due to wiring error.
- Indoor unit-outdoor unit signal transmission error due to disturbed power supply waveform.
- Indoor unit-outdoor unit signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units (wire No. 2).

Troubleshooting

Check No.10
Refer to P.119


Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.
Check the indoor unit-outdoor unit connection wires.
Is there any wiring error?
YES
Correct the indoor unit-outdoor unit connection wires.
NO
Check the outdoor unit's LED A.
Is LED A flashing?
NO
Diagnose the outdoor unit.
YES
Check the voltage of the indoor unit-outdoor unit connection wires between No. 1 and No. 2, and between No 2 and No. 3.
Is the voltage 0 V?
YES
Replace the connection wires between the indoor and outdoor units.
NO
Check No. 10
Check power supply waveform.
Is there any disturbance?
NO
Replace indoor unit control PCB .
YES
Locate the cause of the disturbance of the power supply waveform, and correct it.
(R2840)

4.8 OL Activation (Compressor Overload) (E5)

Remote Controller Display

E5

Method of Malfunction Detection

A compressor overload is detected through compressor OL.

Malfunction Decision Conditions

- If the compressor OL is activated twice, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

* The operating temperature condition is not specified.

Supposed Causes

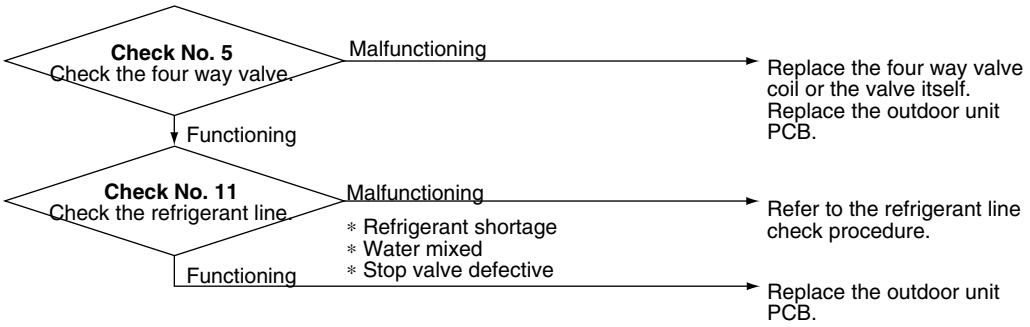
- Refrigerant shortage
- Four way valve malfunctioning
- Outdoor unit PCB defective
- Water mixed in the local piping
- Stop valve defective

Troubleshooting

Check No.5
Refer to P.115

Check No.11
Refer to P.120

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.


Check No. 5
Check the four way valve.
Malfunctioning
Replace the four way valve coil or the valve itself. Replace the outdoor unit PCB.
Functioning
Check No. 11
Check the refrigerant line.
Malfunctioning
* Refrigerant shortage
* Water mixed
* Stop valve defective
Refer to the refrigerant line check procedure.
Functioning
Replace the outdoor unit PCB.

(R3073)

4.9 Compressor Lock (E6)

Remote Controller Display

E6

Method of Malfunction Detection

Compressor startup errors are detected using input current detected by CT and compressor's operation frequency.

Malfunction Decision Conditions

When the inlet current is over the setting value.

* Setting value = (145 / 256 × Output frequency) – 6 (A)

■ When a compressor startup error is generated 16 times consecutively, the system shuts down. (The 16 time counter resets itself when OL, insufficient gas or compressor startup error does not occur within 60 minutes of compressor operation time (cumulative time) after the error generation.)

Supposed Causes

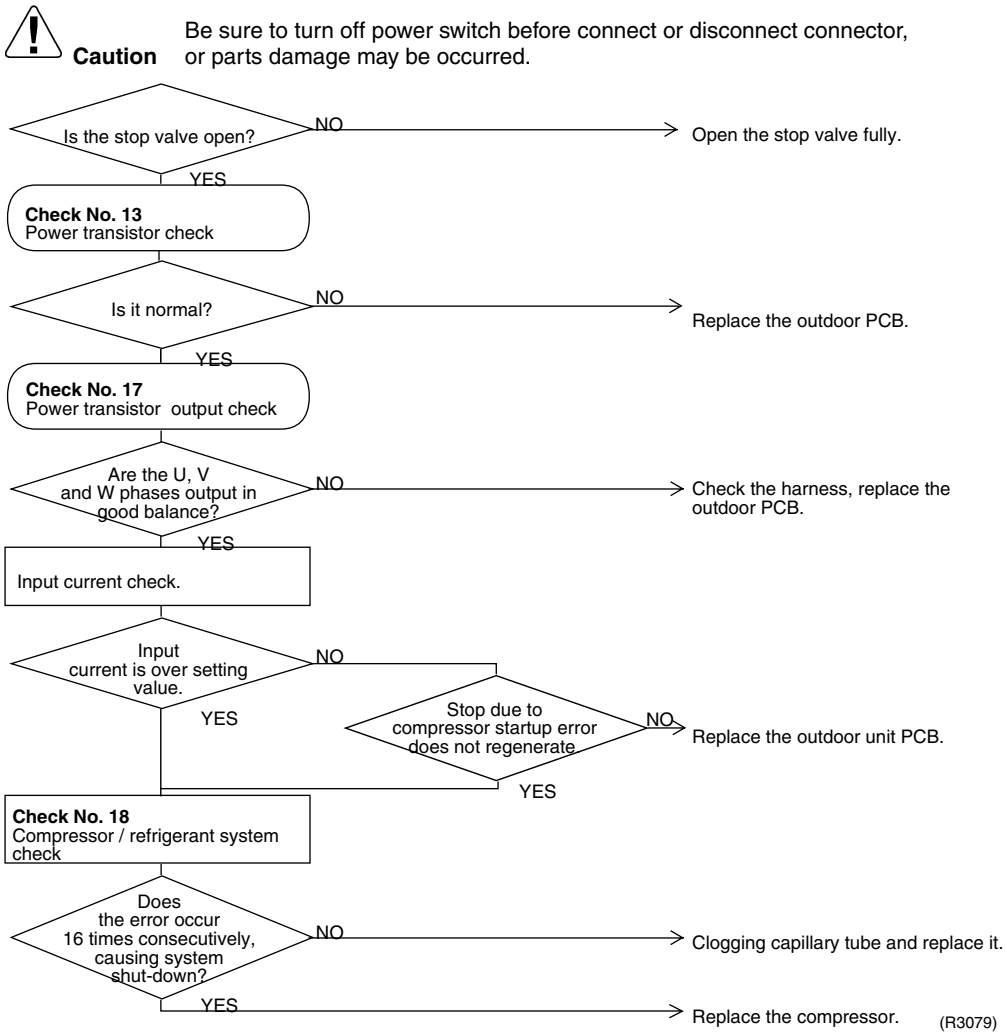
■ Startup error due to faulty compressor.
■ Startup error due to faulty outdoor unit PCB.
■ Startup error due to closed stop valve.
■ Detection error due to faulty outdoor unit PCB.

Troubleshooting

Check No.13
Refer to P.121

Check No.17
Refer to P.123

Check No.18
Refer to P.124



4.10 Input Over Current Detection (E8)

Remote Controller Display

E8

Method of Malfunction Detection

An input over-current is detected by checking the input current value being detected by CT with the compressor running.

Malfunction Decision Conditions

- The following CT input with the compressor running continues for 2.5 seconds.
  Cooling: Above 11A, Heating: Above 13A

Supposed Causes

- Over-current due to compressor failure
- Over-current due to defective power transistor
- Over-current due to defective outdoor unit PCB
- Error detection due to outdoor unit PCB
- Over-current due to short-circuit

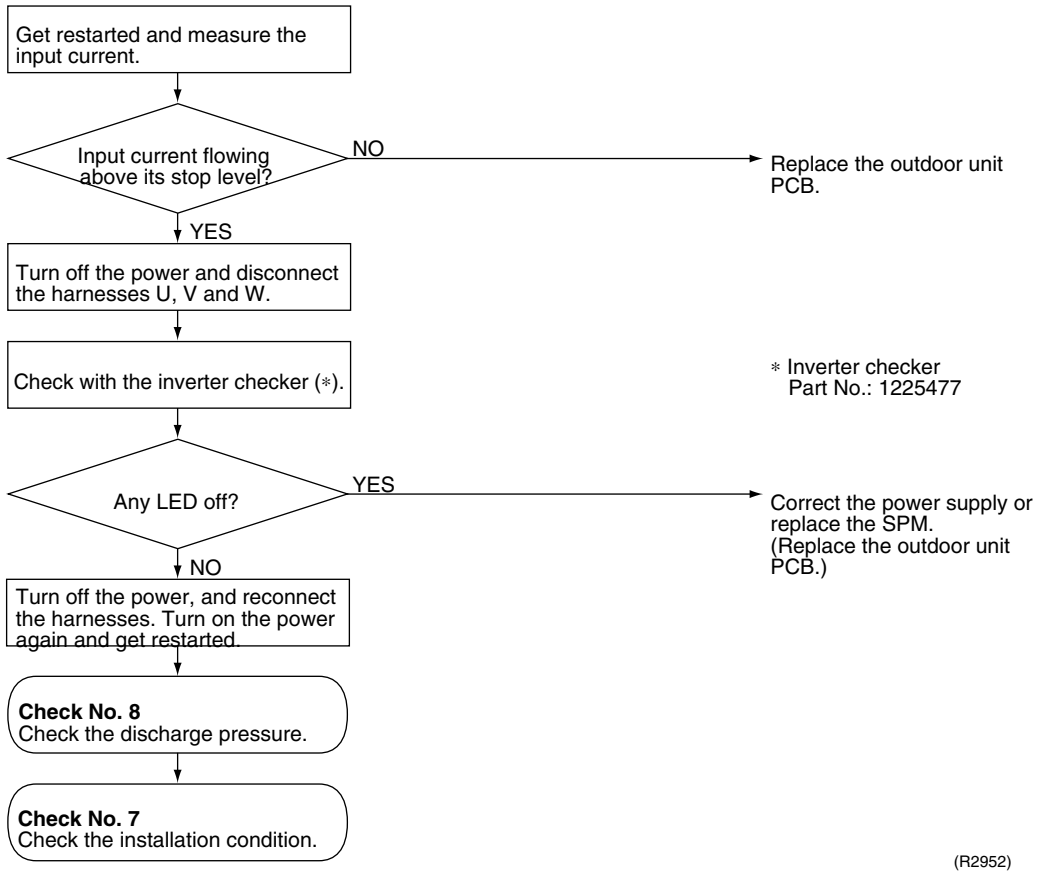
Troubleshooting

Check No.7
Refer to P.117

Check No.8
Refer to P.118

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

* An input over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an input over-current, take the following procedure.


Get restarted and measure the input current.
Input current flowing above its stop level?
NO
Replace the outdoor unit PCB.
YES
Turn off the power and disconnect the harnesses U, V and W.
Check with the inverter checker (*).
* Inverter checker Part No.: 1225477
Any LED off?
YES
Correct the power supply or replace the SPM. (Replace the outdoor unit PCB.)
NO
Turn off the power, and reconnect the harnesses. Turn on the power again and get restarted.
Check No. 8
Check the discharge pressure.
Check No. 7
Check the installation condition.

(R2952)

Note: If the model doesn't have SPM, replace the outdoor unit PCB.

4.11 Four Way Valve Abnormality (EA)

Remote Controller Display

EA

Method of Malfunction Detection

The indoor air temperature thermistor, the indoor unit heat exchanger thermistor, the outdoor temperature thermistor and the outdoor unit heat exchanger thermistor are checked to see if they function within their normal ranges in the operating mode.

Malfunction Decision Conditions

A following condition continues over 10 minute after operating 5 minutes.

- Cooling / dry operation
  (room temp. – indoor heat exchanger temp.) < –10°C
- Heating
  (indoor unit heat exchanger temp. – room temp.) < –10°C

Supposed Causes

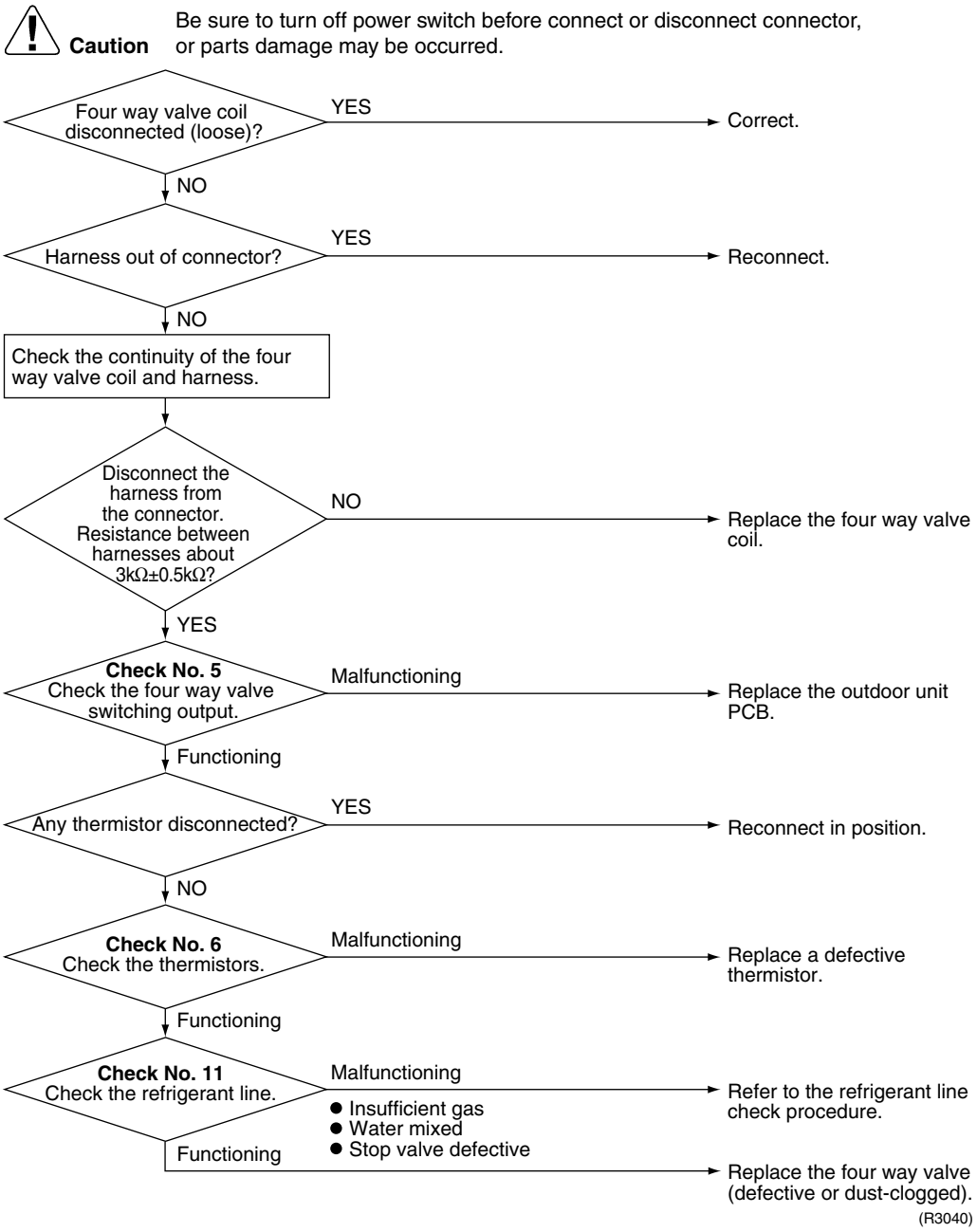
- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Four way valve coil or harness defective
- Four way valve defective
- Foreign substance mixed in refrigerant
- Insufficient gas

Troubleshooting

Check No.5
Refer to P.115

Check No.6
Refer to P.116

Check No.11
Refer to P.120



4.12 High Pressure Control in Cooling (F6)

Remote Controller Display

F6

Method of Malfunction Detection

High-pressure control (stop, frequency drop, etc.) is activated in the cooling mode if the temperature being sensed by the heat exchanger thermistor exceeds the limit.

Malfunction Decision Conditions

Activated when the temperature being sensed by the heat exchanger thermistor rises above 60°C. (Deactivated when the said temperature drops below 50°C.)

Supposed Causes

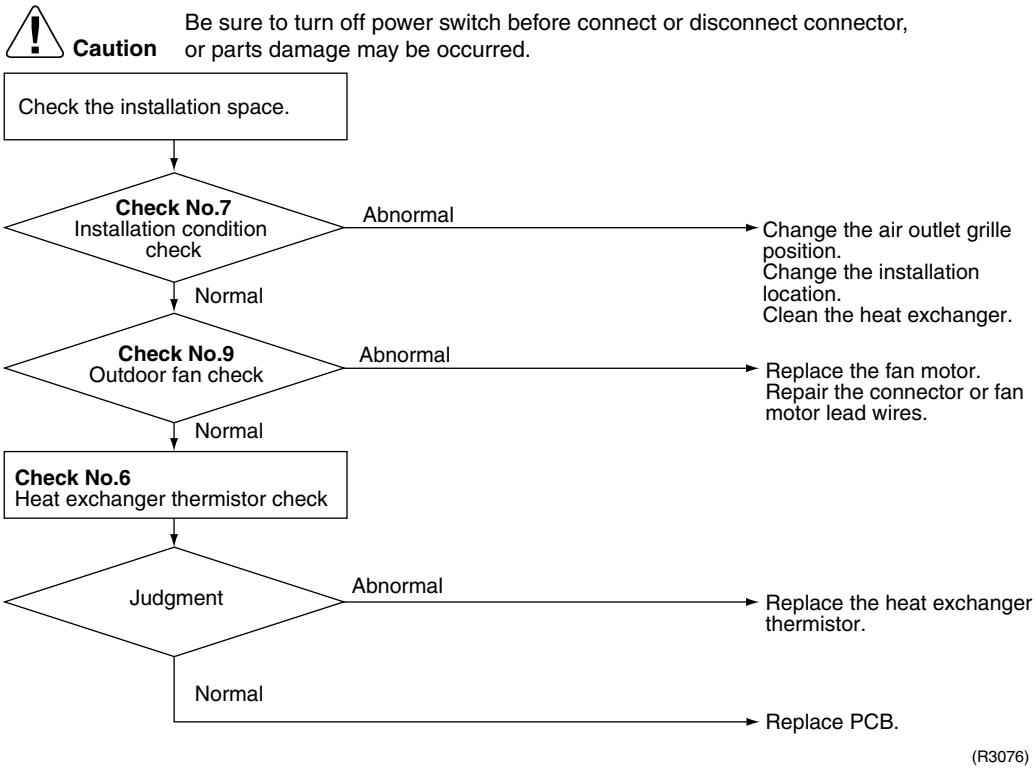
- The installation space is not large enough.
- Faulty outdoor unit fan
- Faulty defrost thermistor
- Faulty outdoor unit PCB
- Faulty stop valve
- Dirty heat exchanger

Troubleshooting

Check No.6
Refer to P.116

Check No.7
Refer to P.117

Check No.9
Refer to P.119



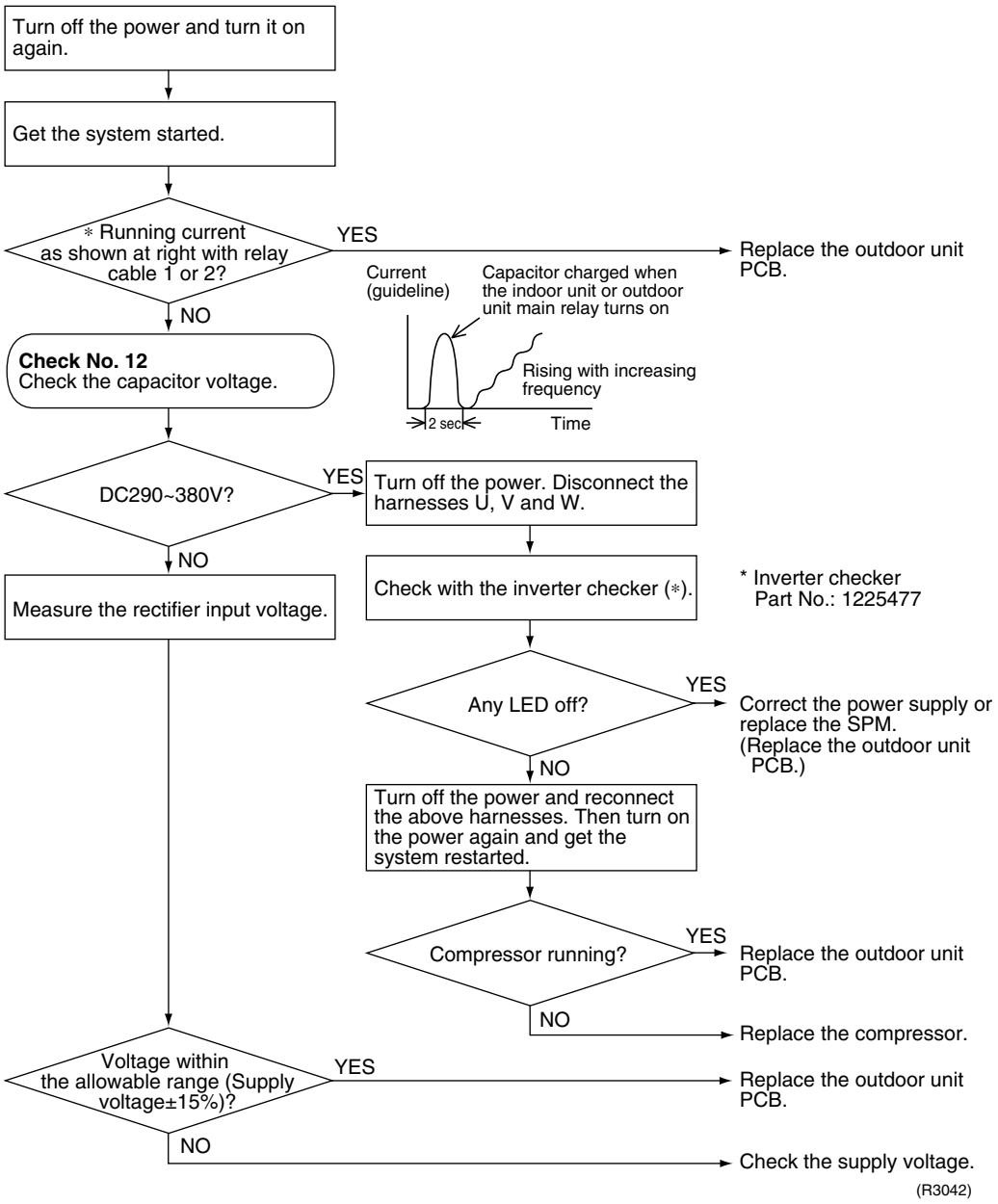
4.13 CT or Related Abnormality (H8)

Remote Controller Display	H8
Method of Malfunction Detection	A CT or related error is detected by checking the compressor running frequency and CT-detected input current.
Malfunction Decision Conditions	The compressor running frequency is below 62 Hz and the CT input is below 0.1 V. (The input current is also below 0.5 A.) ■ If this error repeats 4 times, the system will be shut down. ■ The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).
Supposed Causes	■ Power transistor defective ■ Internal wiring broken or in poor contact ■ Reactor defective ■ Outdoor unit PCB defective

Troubleshooting

Check No.12
Refer to P.120

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.


Turn off the power and turn it on again.
Get the system started.
* Running current as shown at right with relay cable 1 or 2?
YES
Replace the outdoor unit PCB.
NO
Current (guideline)
Capacitor charged when the indoor unit or outdoor unit main relay turns on
Rising with increasing frequency
2 sec
Time
Check No. 12
Check the capacitor voltage.
DC290~380V?
YES
Turn off the power. Disconnect the harnesses U, V and W.
NO
Check with the inverter checker (*).
* Inverter checker
Part No.: 1225477
Measure the rectifier input voltage.
Any LED off?
YES
Correct the power supply or replace the SPM. (Replace the outdoor unit PCB.)
NO
Turn off the power and reconnect the above harnesses. Then turn on the power again and get the system restarted.
Compressor running?
YES
Replace the outdoor unit PCB.
NO
Replace the compressor.
Voltage within the allowable range (Supply voltage±15%)?
YES
Replace the outdoor unit PCB.
NO
Check the supply voltage.
(R3042)

Note: If the model doesn't have SPM, replace the outdoor unit PCB.

4.14 Thermistor or Related Abnormality (Outdoor Unit) (P4,J6,H9)

Remote Controller Display

P4, J6, H9

Method of Malfunction Detection

This type of error is detected by checking the thermistor input voltage to the microcomputer.
[A thermistor error is detected by checking the temperature.]

Malfunction Decision Conditions

The thermistor input is above 4.96 V or below 0.04 V with the power on.

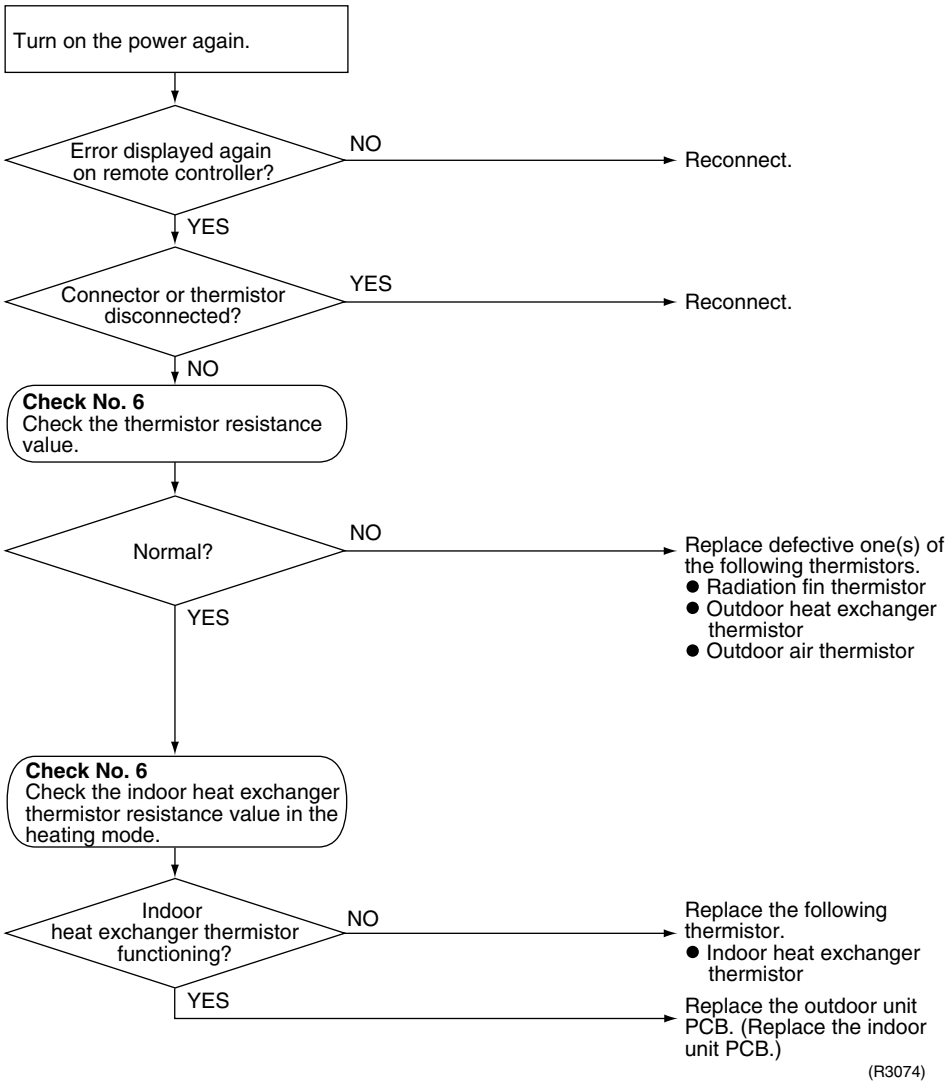
Supposed Causes

- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Indoor unit PCB defective

Troubleshooting

Check No.6
Refer to P.116

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



P4 : Radiation fin thermistor
J6 : Outdoor heat exchanger thermistor
H9 : Outdoor air thermistor

4.15 Electrical Box Temperature Rise (L3)

Remote Controller Display

L3

Method of Malfunction Detection

An electrical box temperature rise is detected by checking the radiation fin thermistor with the compressor off.

Malfunction Decision Conditions

With the compressor off, the radiation fin temperature is above 122°C. (Reset is made when the temperature drops below 113°C.)

Supposed Causes

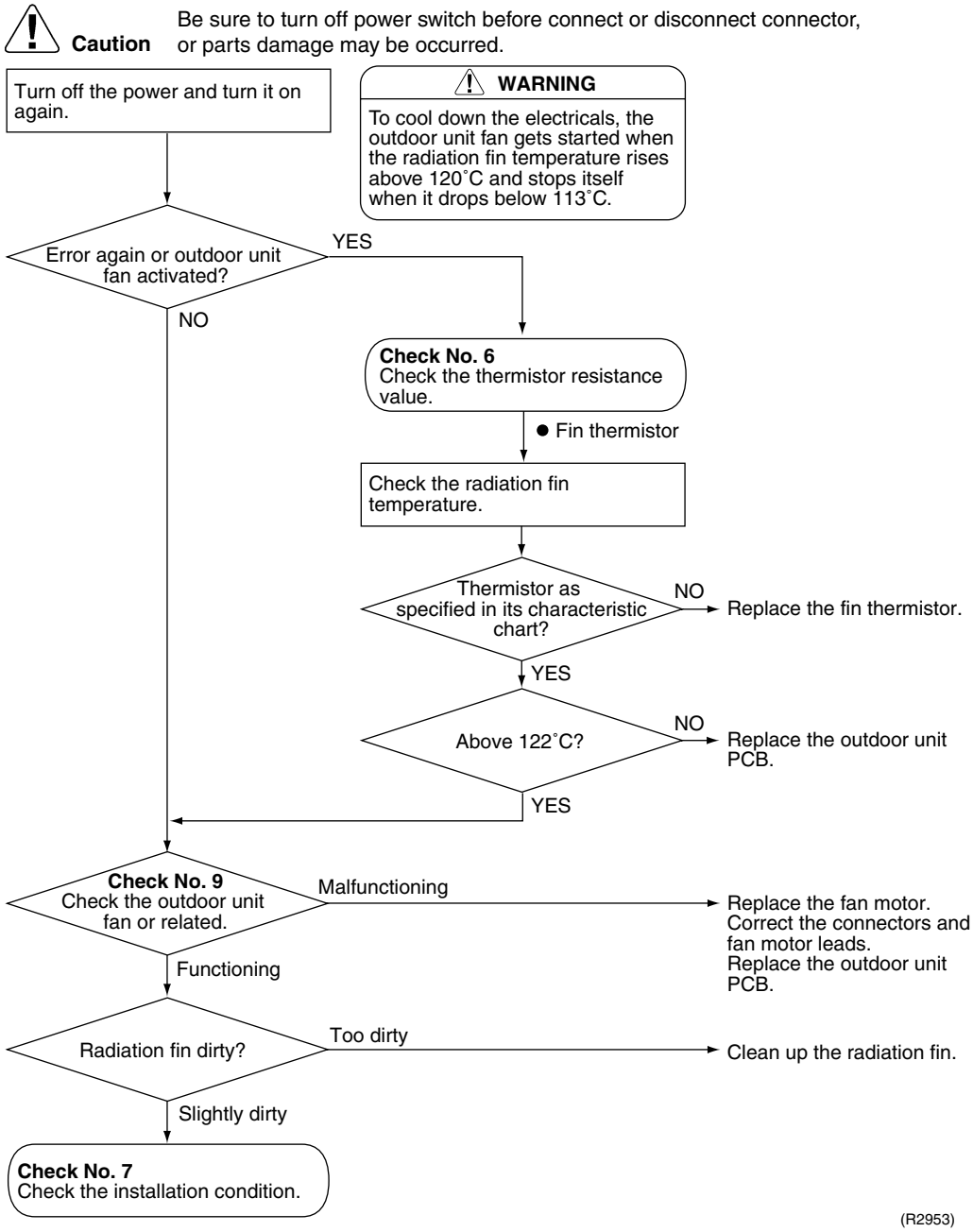
- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective

Troubleshooting

Check No.6
Refer to P.116

Check No.7
Refer to P.117

Check No.9
Refer to P.119


Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.
Turn off the power and turn it on again.
WARNING
To cool down the electricals, the outdoor unit fan gets started when the radiation fin temperature rises above 120˚C and stops itself when it drops below 113˚C.
Error again or outdoor unit fan activated?
YES
NO
Check No. 6
Check the thermistor resistance value.
● Fin thermistor
Check the radiation fin temperature.
Thermistor as specified in its characteristic chart?
NO
Replace the fin thermistor.
YES
Above 122˚C?
NO
Replace the outdoor unit PCB.
YES
Check No. 9
Check the outdoor unit fan or related.
Malfunctioning
Replace the fan motor.
Correct the connectors and fan motor leads.
Replace the outdoor unit PCB.
Functioning
Radiation fin dirty?
Too dirty
Clean up the radiation fin.
Slightly dirty
Check No. 7
Check the installation condition.
(R2953)

4.16 Radiation Fin Temperature Rise (L4)

Remote Controller Display

L4

Method of Malfunction Detection

A radiation fin temperature rise is detected by checking the radiation fin thermistor with the compressor on.

Malfunction Decision Conditions

If the radiation fin temperature with the compressor on is above 81°C,

- If a radiation fin temperature rise takes place 4 times successively, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

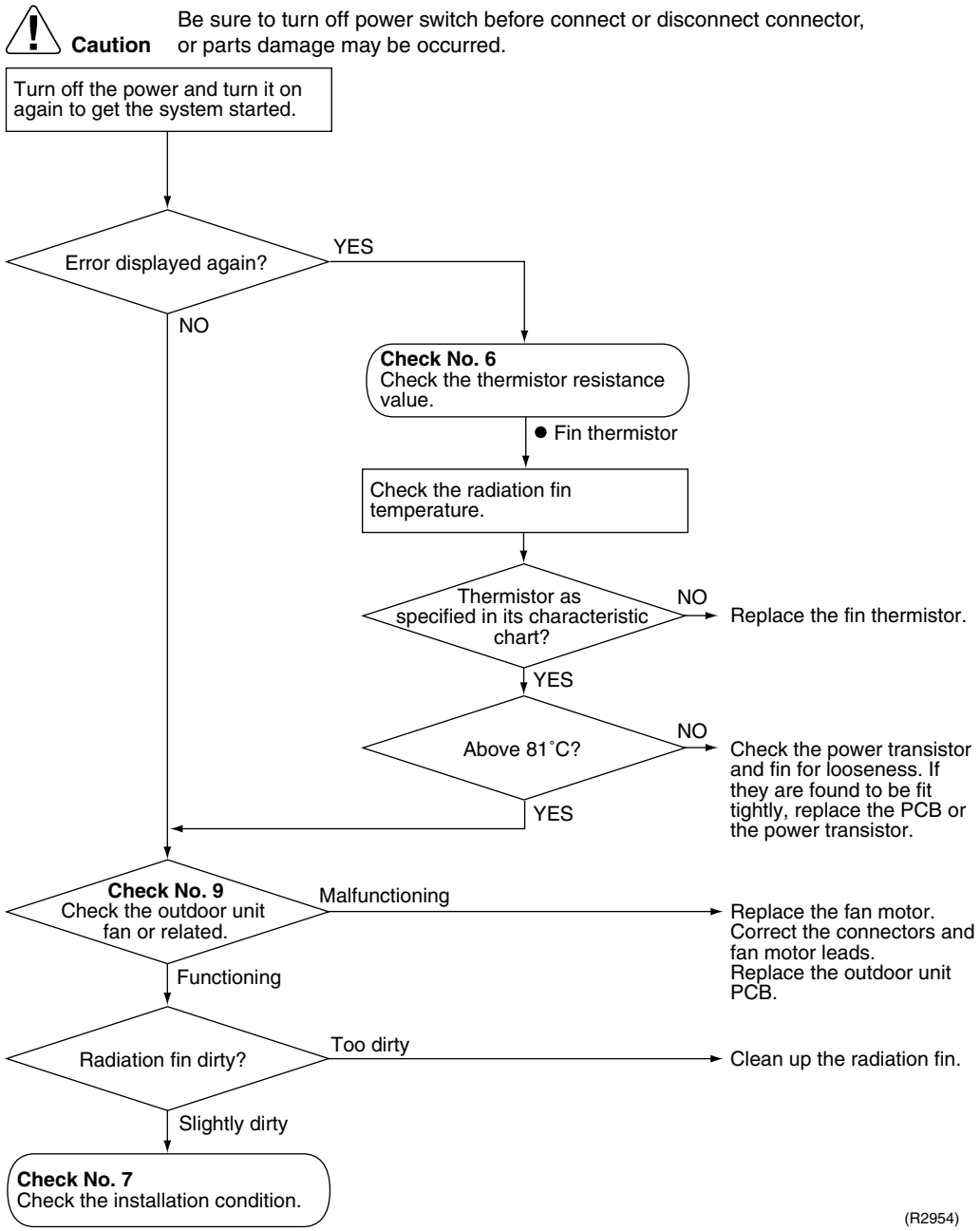
- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective

Troubleshooting

Check No.6
Refer to P.116

Check No.7
Refer to P.117

Check No.9
Refer to P.119


Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.
Turn off the power and turn it on again to get the system started.
Error displayed again?
YES
NO
Check No. 6
Check the thermistor resistance value.
● Fin thermistor
Check the radiation fin temperature.
Thermistor as specified in its characteristic chart?
NO
Replace the fin thermistor.
YES
Above 81˚C?
NO
Check the power transistor and fin for looseness. If they are found to be fit tightly, replace the PCB or the power transistor.
YES
Check No. 9
Check the outdoor unit fan or related.
Malfunctioning
Replace the fan motor.
Correct the connectors and fan motor leads.
Replace the outdoor unit PCB.
Functioning
Radiation fin dirty?
Too dirty
Clean up the radiation fin.
Slightly dirty
Check No. 7
Check the installation condition.
(R2954)

4.17 Output Over Current Detection (L5)

Remote Controller Display

L5

Method of Malfunction Detection

An output over-current is detected by checking the current that flows in the inverter DC section.

Malfunction Decision Conditions

- A position signal error occurs while the compressor is running.
- A speed error occurs while the compressor is running.
- An output over-current input is fed from the output over-current detection circuit to the microcomputer.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 5 minutes (normal)

Supposed Causes

- Over-current due to defective power transistor
- Over-current due to wrong internal wiring
- Over-current due to abnormal supply voltage
- Over-current due to defective PCB
- Error detection due to defective PCB
- Over-current due to closed stop valve
- Over-current due to compressor failure
- Over-current due to poor installation condition

Troubleshooting

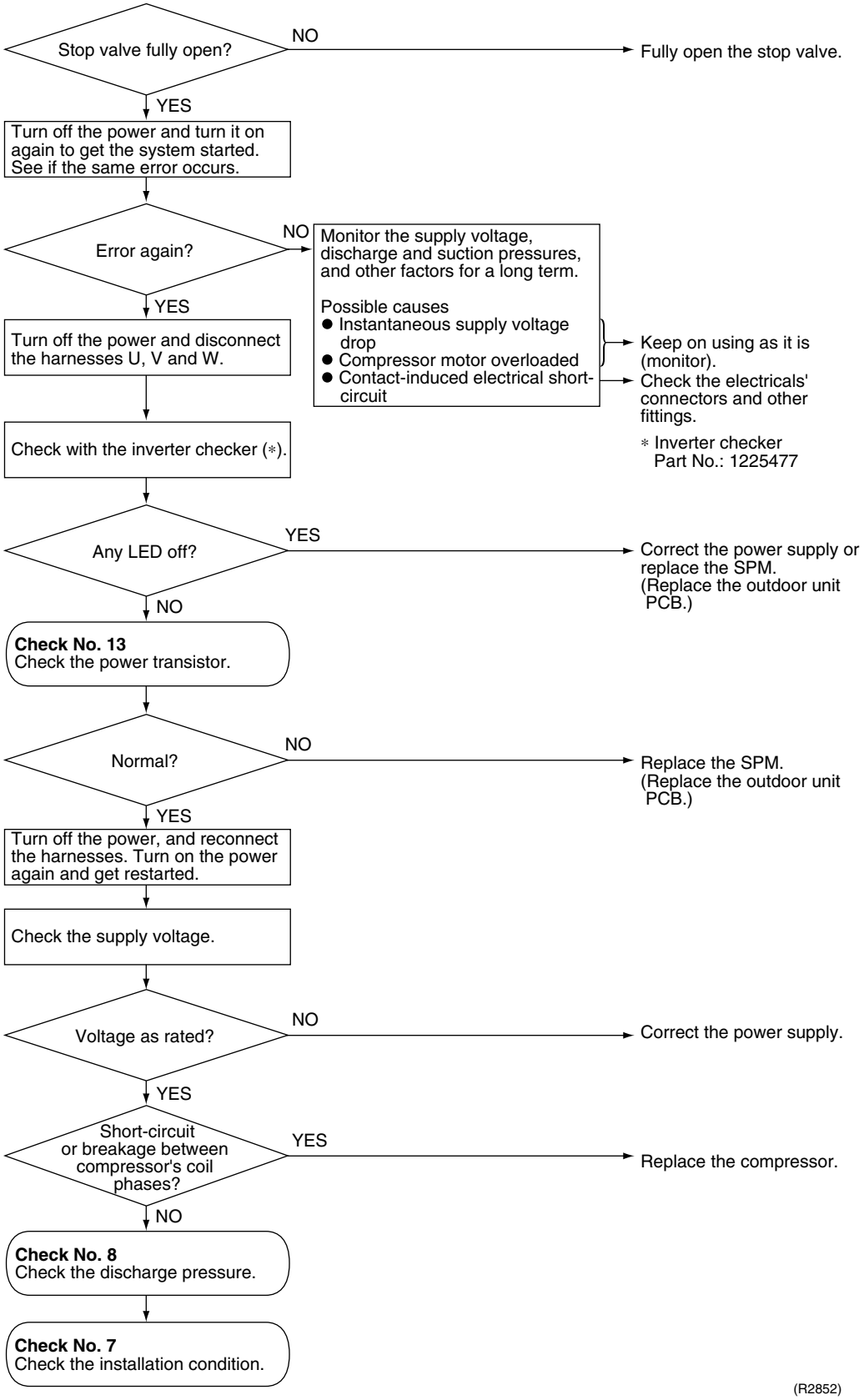
Check No.7
Refer to P.117

Check No.8
Refer to P.118

Check No.13
Refer to P.121

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

* An output over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an output over-current, take the following procedure.


Stop valve fully open?
NO
Fully open the stop valve.
YES
Turn off the power and turn it on again to get the system started. See if the same error occurs.
Error again?
NO
Monitor the supply voltage, discharge and suction pressures, and other factors for a long term.
Possible causes
● Instantaneous supply voltage drop
● Compressor motor overloaded
● Contact-induced electrical short-circuit
Keep on using as it is (monitor).
Check the electricals' connectors and other fittings.
YES
Turn off the power and disconnect the harnesses U, V and W.
Check with the inverter checker (*).
* Inverter checker Part No.: 1225477
Any LED off?
YES
Correct the power supply or replace the SPM. (Replace the outdoor unit PCB.)
NO
Check No. 13
Check the power transistor.
Normal?
NO
Replace the SPM. (Replace the outdoor unit PCB.)
YES
Turn off the power, and reconnect the harnesses. Turn on the power again and get restarted.
Check the supply voltage.
Voltage as rated?
NO
Correct the power supply.
YES
Short-circuit or breakage between compressor's coil phases?
YES
Replace the compressor.
NO
Check No. 8
Check the discharge pressure.
Check No. 7
Check the installation condition.

(R2852)

Note: If the model doesn't have SPM, replace the outdoor unit PCB.

4.18 Insufficient Gas (U0)

Remote Controller Display

U0

Method of Malfunction Detection

Gas shortage detection I : A gas shortage is detected by checking the CT-detected input current value and the compressor running frequency.
Gas shortage detection II : A gas shortage is detected by checking the difference between indoor unit heat exchanger temperature and room temperature as well as the difference between outdoor unit heat exchanger temperature and room temperature.

Malfunction Decision Conditions

Gas shortage detection I :
Input current < 1400× 256 (A/Hz)× Compressor running frequency× Voltage +180
However, when the status of running frequency > 62 (Hz) is kept on for a certain time.
Note : The values are different from model to model.

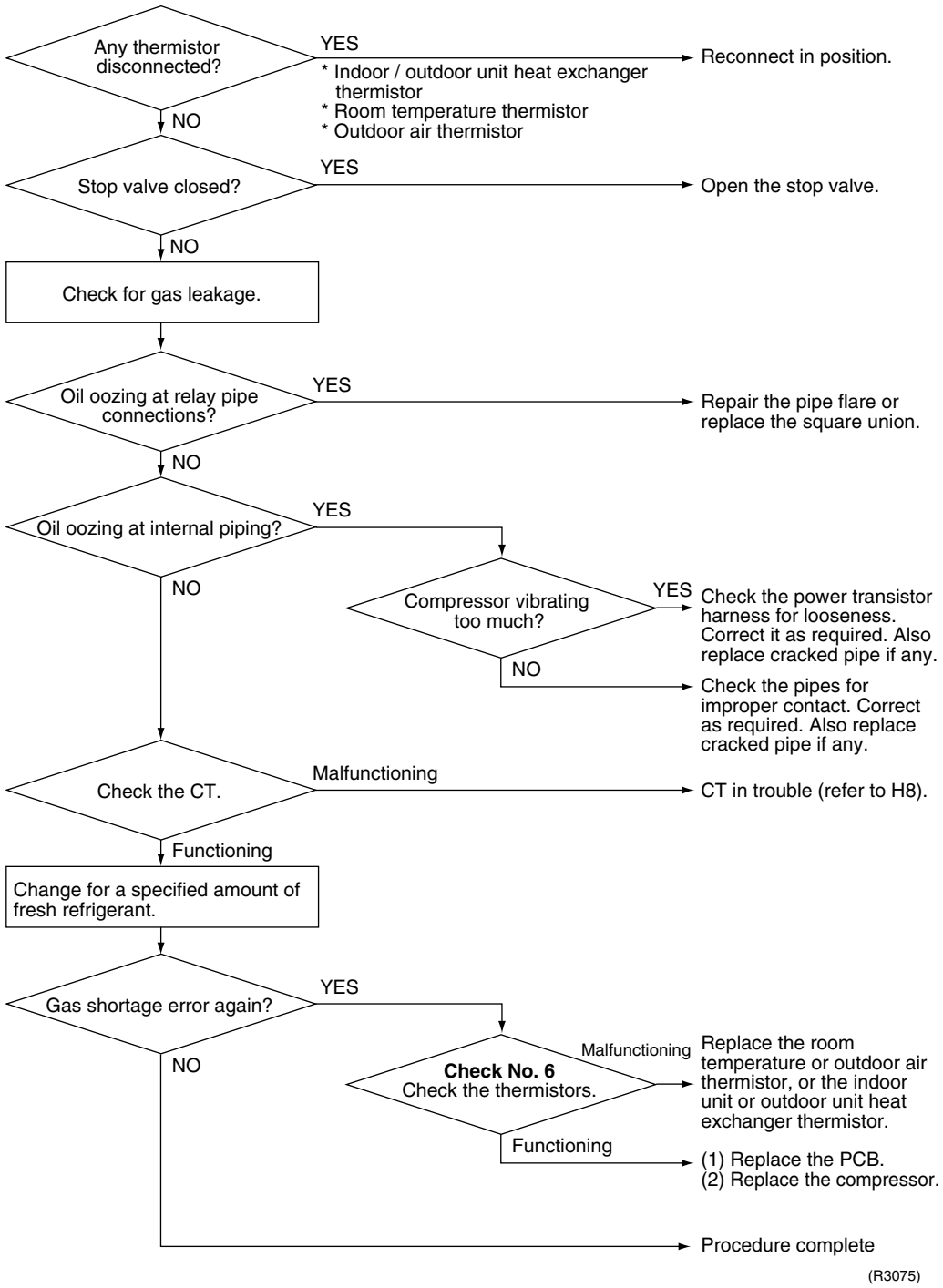
Supposed Causes

- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Indoor unit or outdoor unit heat exchanger thermistor disconnected, room or outdoor air temperature thermistor disconnected
- Stop valve closed

Troubleshooting

Check No.6
Refer to P.116

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.


Any thermistor disconnected?
YES
* Indoor / outdoor unit heat exchanger thermistor
* Room temperature thermistor
* Outdoor air thermistor
Reconnect in position.
NO
Stop valve closed?
YES
Open the stop valve.
NO
Check for gas leakage.
Oil oozing at relay pipe connections?
YES
Repair the pipe flare or replace the square union.
NO
Oil oozing at internal piping?
YES
Compressor vibrating too much?
YES
Check the power transistor harness for looseness. Correct it as required. Also replace cracked pipe if any.
NO
Check the pipes for improper contact. Correct as required. Also replace cracked pipe if any.
NO
Check the CT.
Malfunctioning
CT in trouble (refer to H8).
Functioning
Change for a specified amount of fresh refrigerant.
Gas shortage error again?
YES
Malfunctioning
Check No. 6
Check the thermistors.
Replace the room temperature or outdoor air thermistor, or the indoor unit or outdoor unit heat exchanger thermistor.
Functioning
(1) Replace the PCB.
(2) Replace the compressor.
NO
Procedure complete

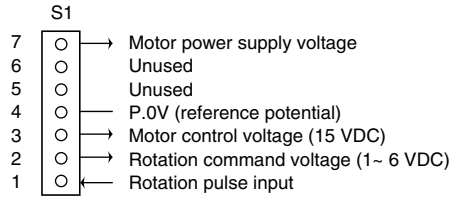
(R3075)

5. Check

5.1 Fan Motor Connector Output Check

Check No.01

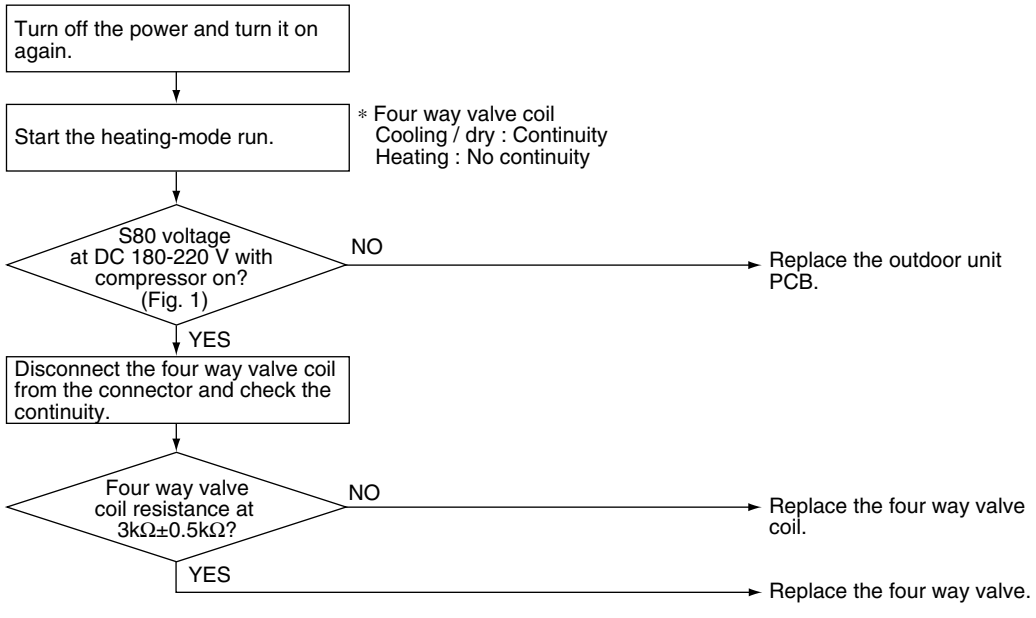
1. Check connector connection.
2. Check motor power supply voltage output (pins 4-7).
3. Check motor control voltage (pins 4-3).
4. Check rotation command voltage output (pins 4-2).
5. Check rotation pulse input (pins 4-1).



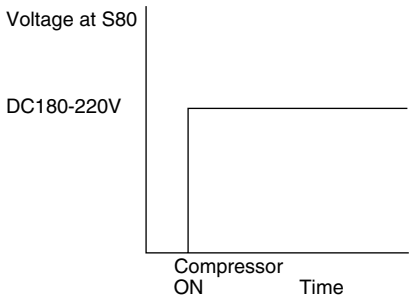
(R3199)

5.2 Four Way Valve Performance Check

Check No.5


Turn off the power and turn it on again.
Start the heating-mode run.
* Four way valve coil
Cooling / dry : Continuity
Heating : No continuity
S80 voltage at DC 180-220 V with compressor on? (Fig. 1)
NO
Replace the outdoor unit PCB.
YES
Disconnect the four way valve coil from the connector and check the continuity.
Four way valve coil resistance at 3kΩ±0.5kΩ?
NO
Replace the four way valve coil.
YES
Replace the four way valve.

(Fig. 1)



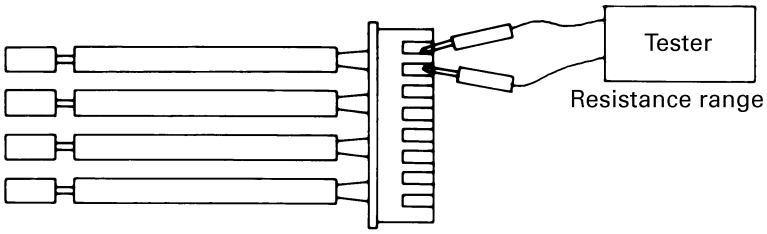
(R3047)

5.3 Thermistor Resistance Check

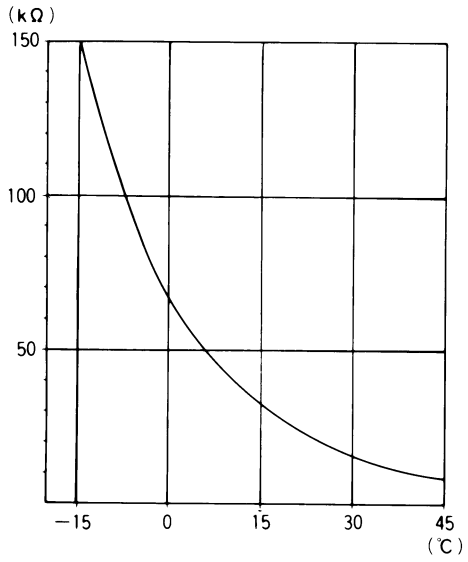
Check No.6

Remove the connectors of the thermistors on the PCB, and measure the resistance of each thermistor using tester.
The relationship between normal temperature and resistance is shown in the graph and the table below.

Thermistor Temperature (°C)	R25°C=20kΩ B=3950
–20	211.0 (kΩ)
–15	150
–10	116.5
–5	88
0	67.2
5	51.9
10	40
15	31.8
20	25
25	20
30	16
35	13
40	10.6
45	8.7
50	7.2



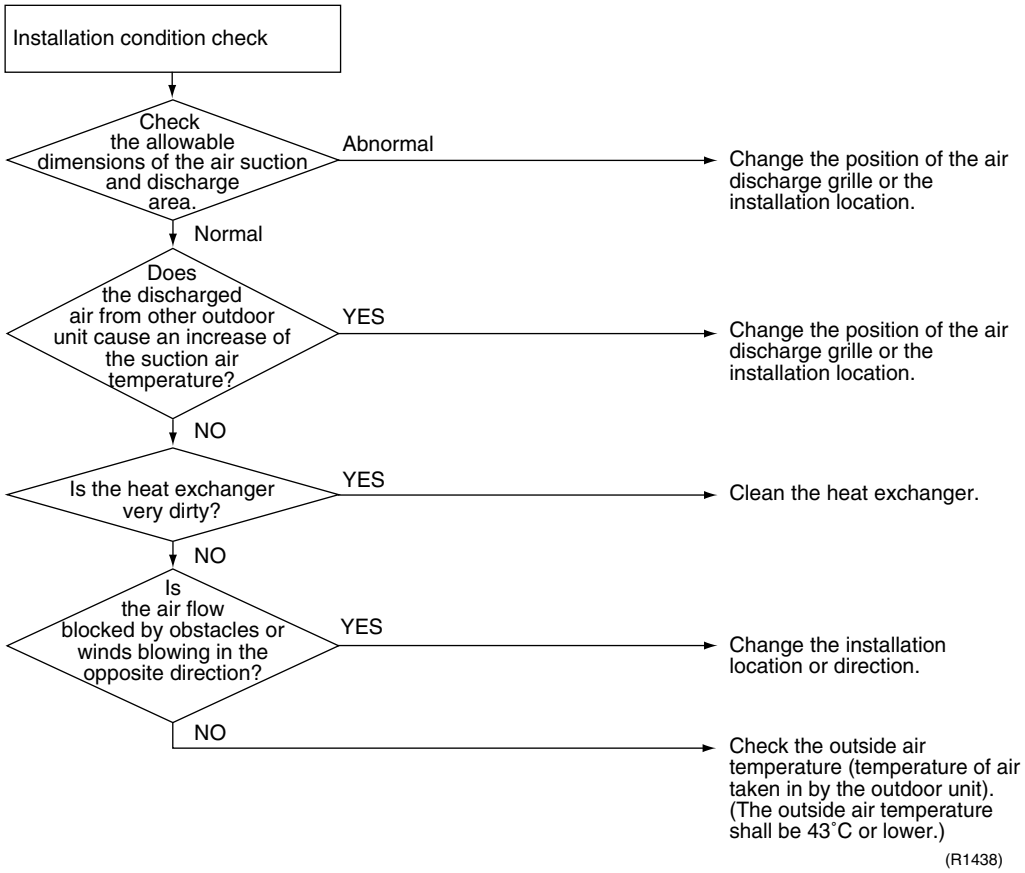
（R25＝20kΩ、B＝3950）



(R1437)

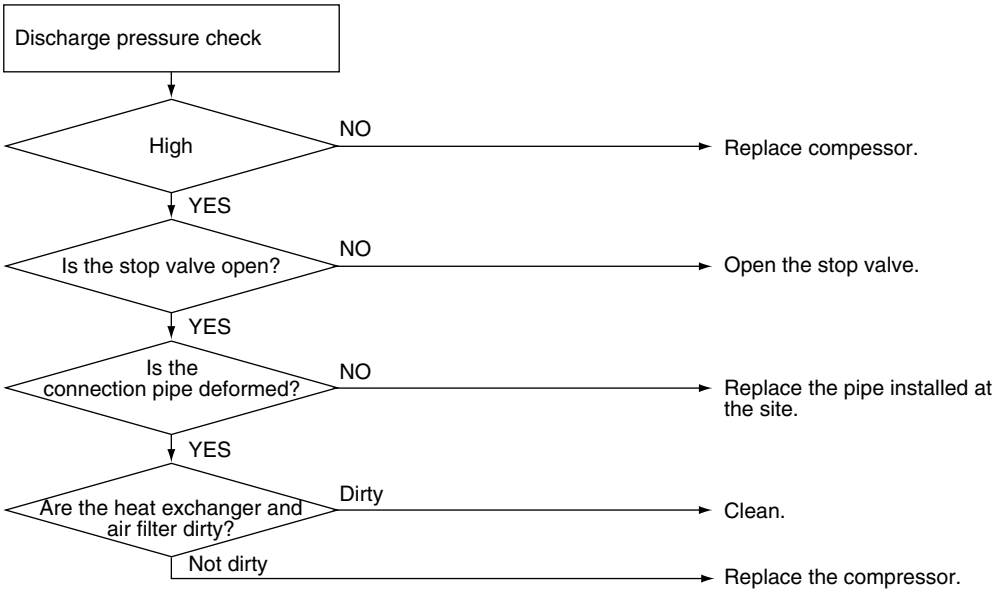
5.4 Installation Condition Check

Check No.7


Installation condition check
Check the allowable dimensions of the air suction and discharge area.
Abnormal
Change the position of the air discharge grille or the installation location.
Normal
Does the discharged air from other outdoor unit cause an increase of the suction air temperature?
YES
Change the position of the air discharge grille or the installation location.
NO
Is the heat exchanger very dirty?
YES
Clean the heat exchanger.
NO
Is the air flow blocked by obstacles or winds blowing in the opposite direction?
YES
Change the installation location or direction.
NO
Check the outside air temperature (temperature of air taken in by the outdoor unit). (The outside air temperature shall be 43˚C or lower.)
(R1438)

5.5 Discharge Pressure Check

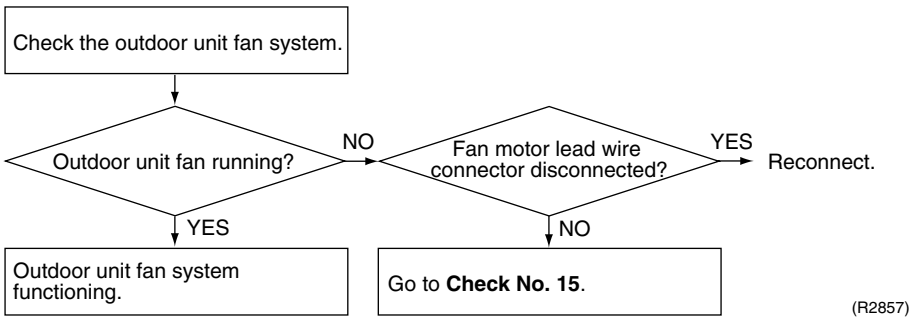
Check No.8



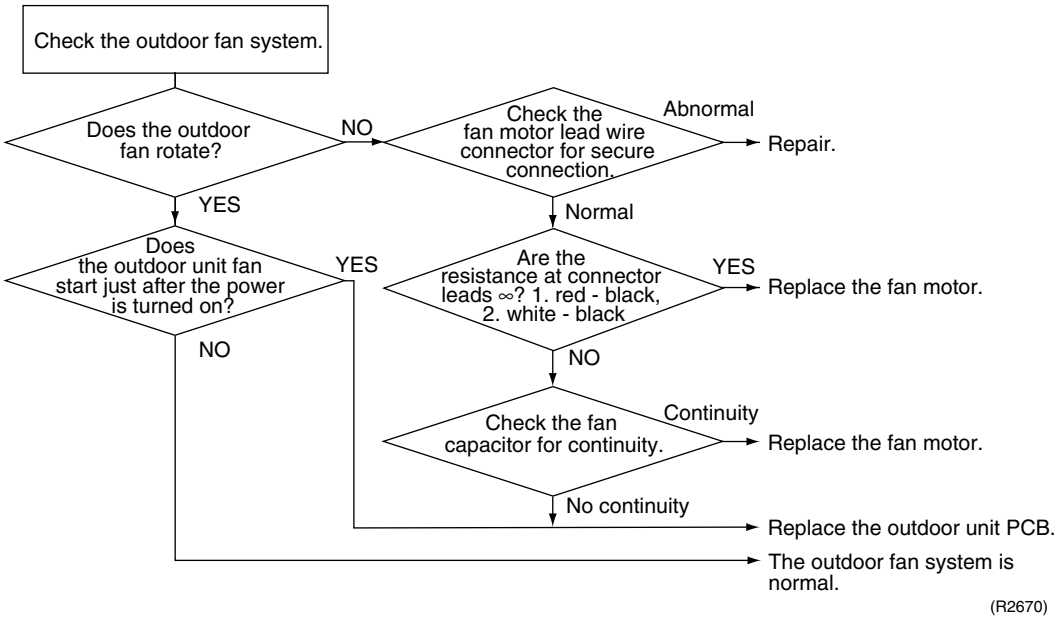
5.6 Outdoor Unit Fan System Check

Check No.9

DC motor — FT50/60CV1A



AC motor — FT25/35CV1A, FTY25/35CVMA



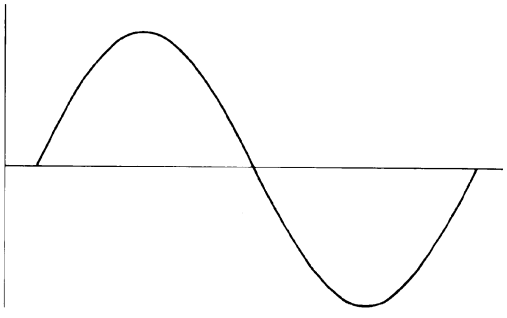
5.7 Power Supply Waveforms Check

Check No.10

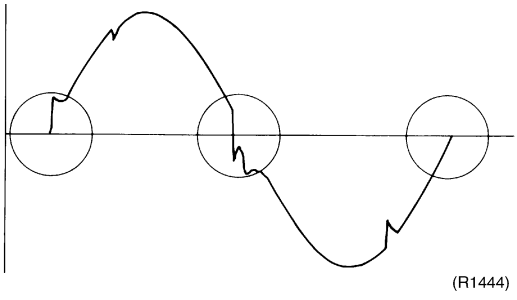
Measure the power supply waveform between pins 1 and 3 on the terminal board, and check the waveform disturbance.

- Check to see if the power supply waveform is a sine wave (Fig.1).
- Check to see if there is waveform disturbance near the zero cross (sections circled in Fig.2)

[Fig.1]

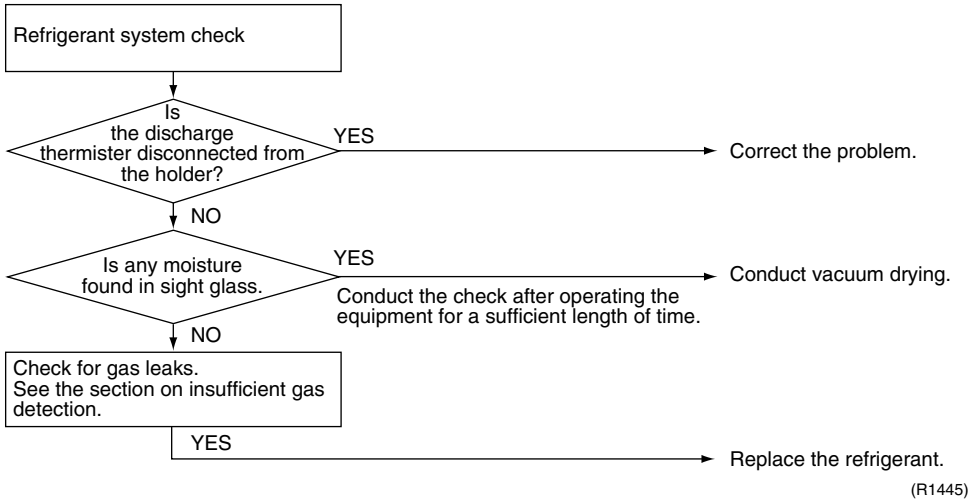


[Fig.2]



5.8 Inverter Units Refrigerant System Check

Check No.11


Refrigerant system check
Is the discharge thermister disconnected from the holder?
YES
Correct the problem.
NO
Is any moisture found in sight glass.
YES
Conduct vacuum drying.
Conduct the check after operating the equipment for a sufficient length of time.
NO
Check for gas leaks. See the section on insufficient gas detection.
YES
Replace the refrigerant.
(R1445)

5.9 Capacitor Voltage Check

Check No.12

< Measuring method >
Before measuring, operate the unit for several minutes, then shut down the operation by force using the circuit breaker.

- If the unit is shut down using the remote controller instead of the circuit breaker, the capacitor discharges the electric load, thus disallowing accurate measurement.

Note: The charge section is applied with high voltage. Therefore, exercise caution during measurement to prevent electric shock.

< Measuring positions >
Take measurements at the power transistor (+) and (-) terminals in the same way as described in section 1.
Set the multi-tester to DC and VOLTAGE RANGE before measurement.

* Since capacitor (+) and (-) are connected to power transistor (+) and (-), capacitor voltage can be measured at the power transistor (+) and (-) terminals.

5.10 Power Transistor Check

Check No.13

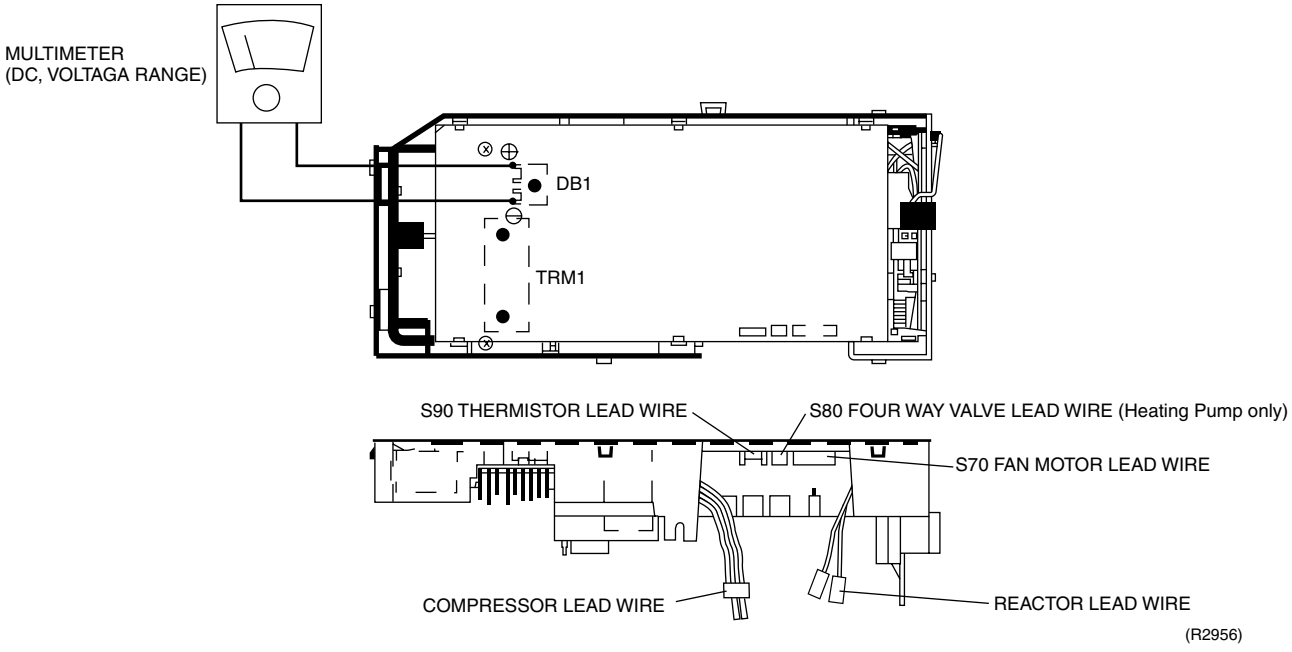
Note: Check to make sure that the voltage between the terminal of Power transistor (+) and (-) is approx. 0 volt before checking power transistor.

< Measuring method >
Disconnect the compressor harness connector from the outdoor unit PCB. To disengage the connector, press the protrusion on the connector.
Then, follow the procedure below to measure resistance between power transistor (+) and (-) and the U, V and W terminals of the compressor connector with a multi-tester. Evaluate the measurement results for a pass/fail judgment.

<Power transistor check>

Negative (-) terminal of tester (positive terminal (+) for digital tester)	Power transistor (+)	UVW	Power transistor (-)	UVW
Positive (+) terminal of tester (negative terminal (-) for digital tester)	UVW	Power transistor (+)	UVW	Power transistor (-)
Normal resistance	Several kΩ to several MΩ (*)			
Unacceptable resistance	Short (0 Ω) or open			

<Measuring positions>

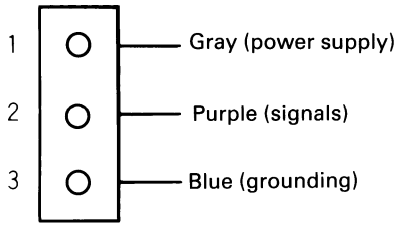


5.11 Hall IC Check

Check No.16

1. Check the connector connection.
2. With the power ON, operation OFF, and the connector connected, check the following.
   ∗Output voltage of about 5 V between pins 1 and 3.
   ∗Generation of 3 pulses between pins 2 and 3 when the fan motor is operating.

Failure of (1) → faulty PCB → Replace the PCB.
Failure of (2) → faulty hall IC → Replace the fan motor.
Both (1) and (2) result → Replace the PCB.



(R1968)

5.12 Power Transistor Output Check

Check No.17 Measure the output current and voltage of the power transistor.

Output Current Measurement

Remove the front panel, and measure the current in the red, yellow and blue wire harness inside the compressor using a clamp meter.

1. Attach the clamp meter to the red, yellow and blue wire harness, and conduct forced cooling operation.
2. When the output frequency has stabilized, measure the output current of each phase.
3. If the current outputs of all the phase are balanced, it is normal.
4. If even one phase is out of balance, replace the outdoor unit PCB.
5. If the compressor stops before the output frequency stabilizes, measure the output voltage.

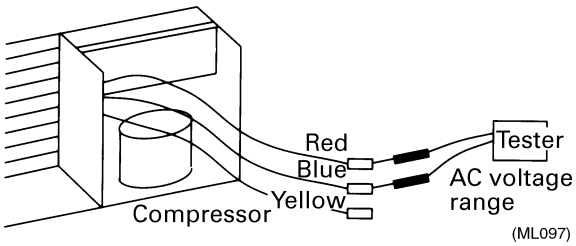
Output Voltage Measurement

Remove the front panel, and disconnect the red, yellow and blue wire harness inside the compressor from the terminals. Measure the output voltage of the red, yellow and blue wires using a tester.

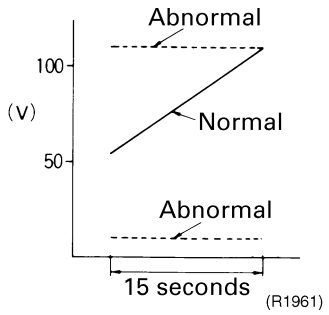
1. Conduct forced cooling operation with the equipment in the condition shown in Fig.1.
2. Measure the voltage between the operation start (when the outdoor unit fan starts rotating) to operation halt caused by an CT error (about 15 seconds).
3. Reset the power, and repeat steps (1) to (3) for each phase of U-V, V-W and W-U.
4. If the voltages of all the phases show results similar to the solid line in the graph shown in Fig.2, the outdoor PCB is normal.
5. If the voltage of even one phase deviates from the solid line shown in Fig.2, conduct the following test.

■ Check the harness between the power transistor and compressor (check items: breaking of wire and wiring errors). If the harness is normal, replace the PCB..

[Fig.1]



[Fig.2]

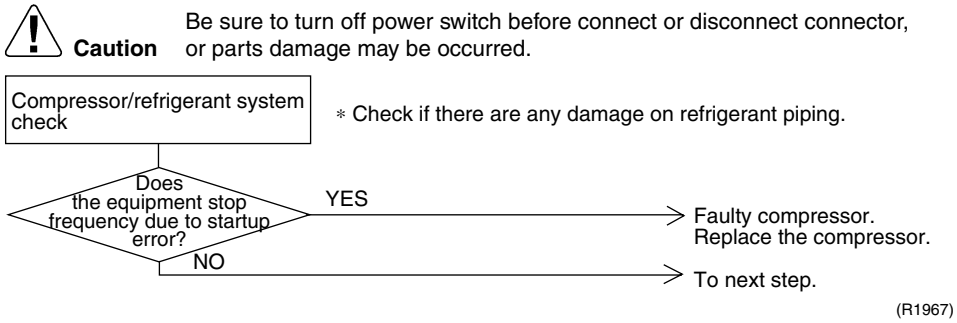


Note:

1. Do not touch the terminals of the red, yellow and blue wires when the power is supplied. (Touching them is very dangerous since a voltage of over 100V is applied.)
2. Do not short-circuit the terminals of the red, yellow, and blue wires.

5.13 Inverter Units Compressor / Refrigerant System Check

Check No.18


Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.
Compressor/refrigerant system check
* Check if there are any damage on refrigerant piping.
Does the equipment stop frequency due to startup error?
YES
Faulty compressor. Replace the compressor.
NO
To next step.
(R1967)

Part 7
Removal Procedure

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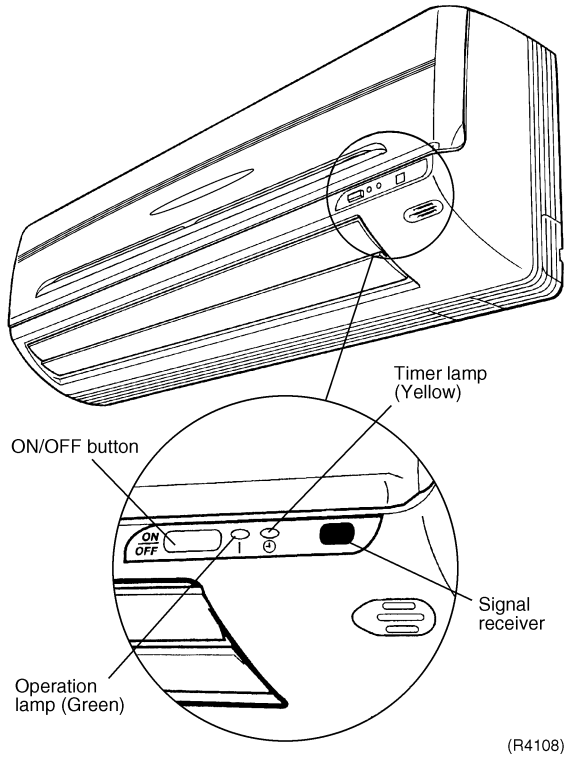
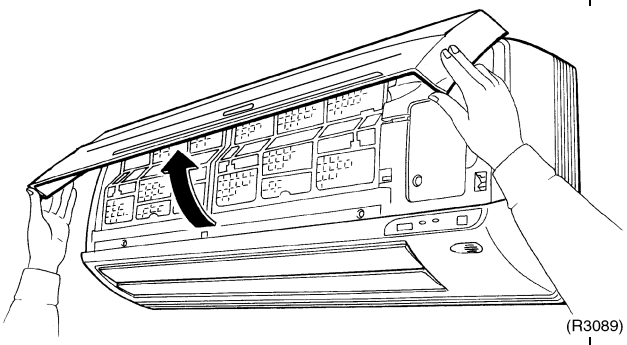
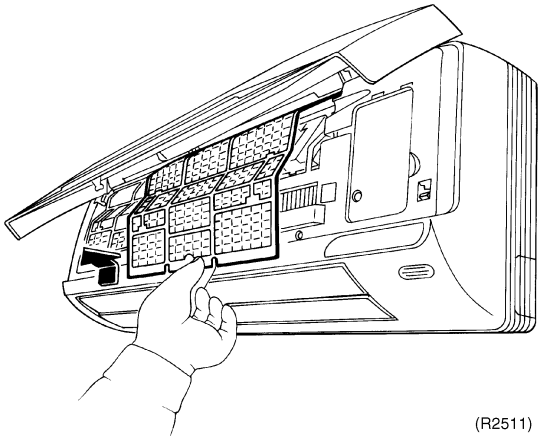
1. FT25/35CV1A, FTY25/35CVMA

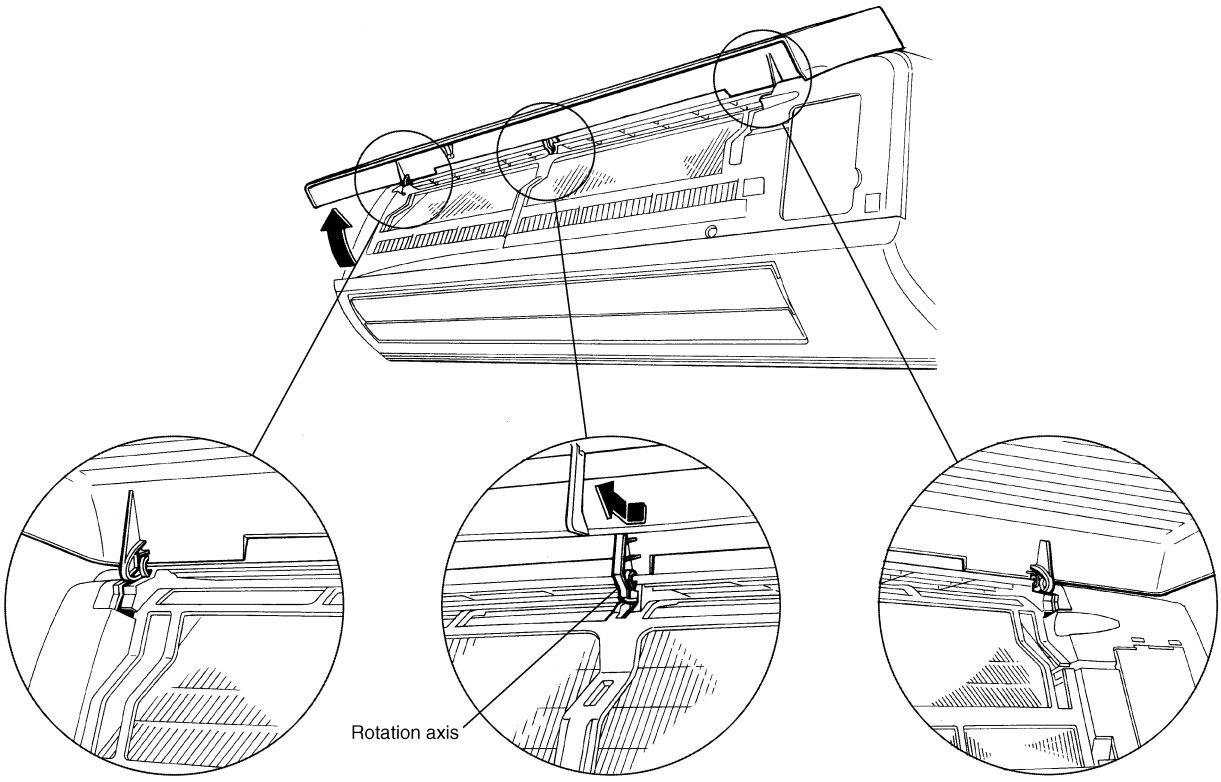
1.1 Removal of Air Filter

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

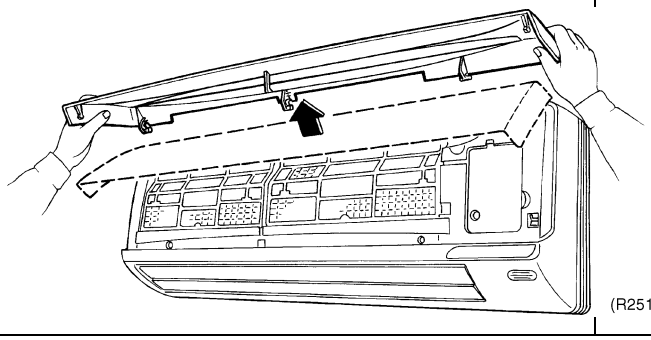
Step	Procedure	Points
1. External features		■ If ON/OFF button is kept pushing for 5 seconds, a forced cooling operation will be carried out for approx. 15 minutes. ■ When the signal receiver catches a signal from the remote controller, it produces beep sound and the operation lamp blinks.
2. Remove the air filters. 1 Pull protrusions on left and right sides of panel with fingers and open front grille all the way.		
2 Lift center section of air filter and disengage hooks. Remove air filter by pulling forward.		■ Left and right filters are interchangeable. ■ To re-install, insert air filter along the guide.

Step	Procedure	Points
3. Remove the front panel.		
1	Hook a finger onto the projection part provided on the both sides of the unit's panel and open up the panel to the position higher than it will stop.	Support the front panel by one hand, while remove the rotation axis at the upper center by the other hand. ■ And pull out the front panel forward to remove.
2	Remove front panel from the unit.	

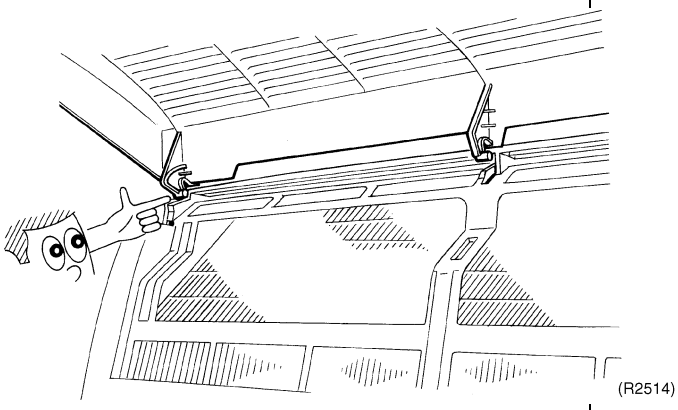


Slide the center rotary axis the left and remove it out.

(R2512)



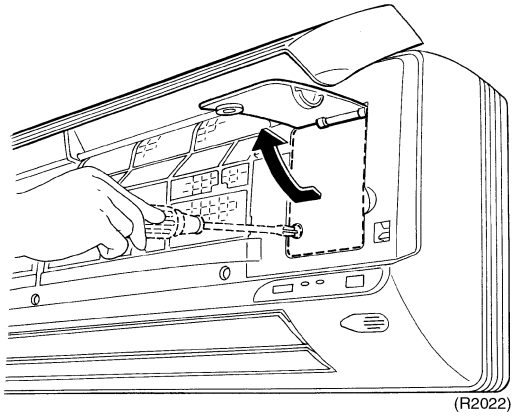
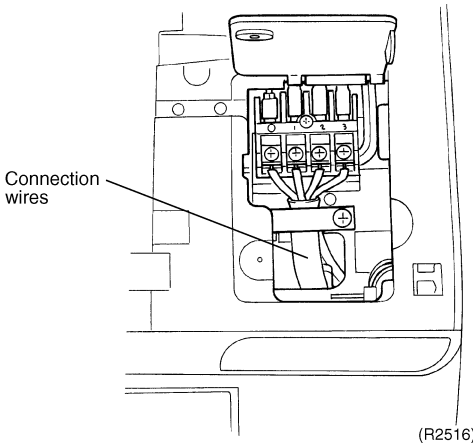
(R2513)

Step	Procedure		Points
3	When restoring the air filter, make sure that the projection parts on the panel are in the guide groove, and then shut the panel.	 (R2514)	

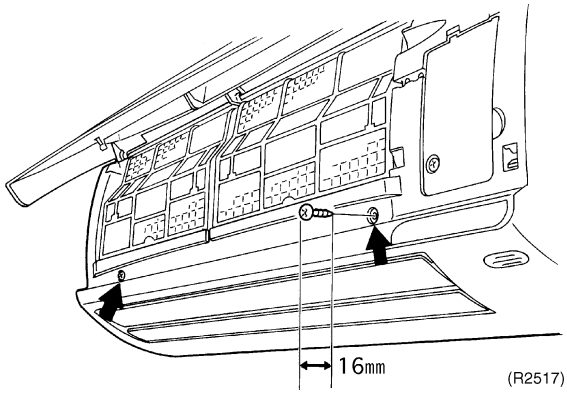
1.2 Removal of Front Grille

Procedure

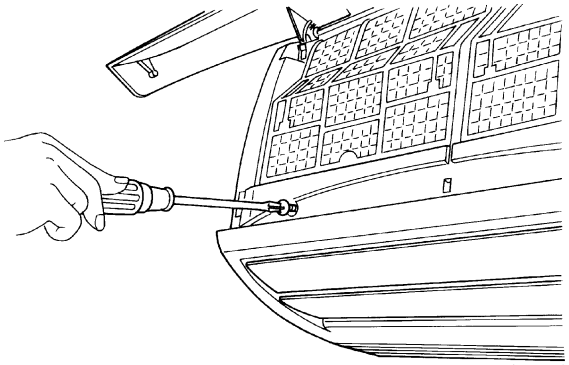
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

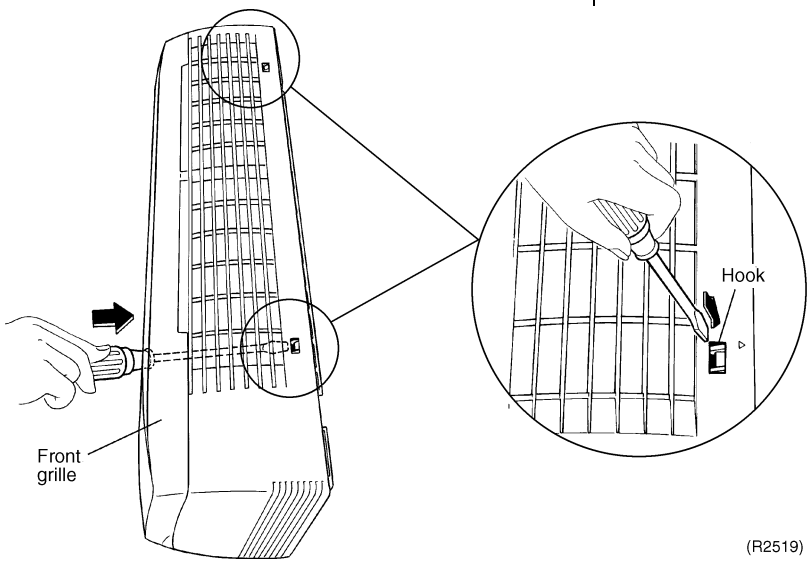
Step	Procedure	Points
1. Remove the service cover.	 (R2022)  (R2516)	■ A switch for field setting is not provided in particular.
1 Remove a service cover mounting screw. Open service cover upward.		

Step	Procedure	Points
2. Remove the front grille assembly.		
1	Remove the two screws, in the right and the left, which fix the main body with the front grille.	■ Screw stoppers inside the flap which were equipped in the existing models are not provided.
2	Disengage the two hooks on the upper part. In case that the hooks are not pressed from above, remove the front panel and then remove the grille while pushing the hook through a clearance between the front grille and the heat exchanger.	■ At the upper part there are two hooks in the left and the right. ■ Disengage the hooks by pressing knobs with a screwdriver.

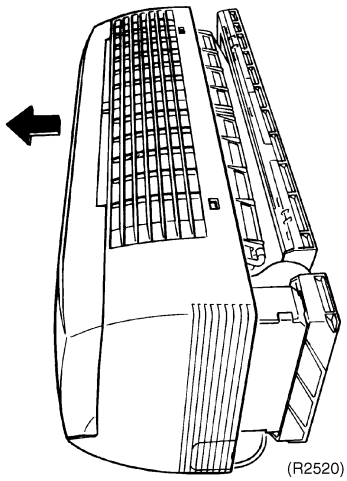
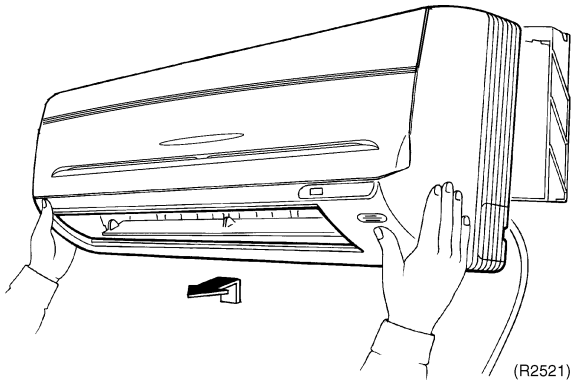


(R2517)


(R2518)



(R2519)

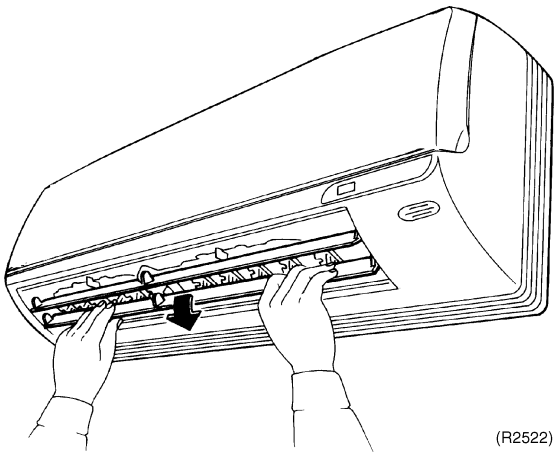
Step	Procedure		Points
3	The front grille can be removed in a manner to pull out the upper part forward and lift up the lower part.	 (R2520)  (R2521)	■ When restoring the grille, Make sure whether each hook is set as it was.

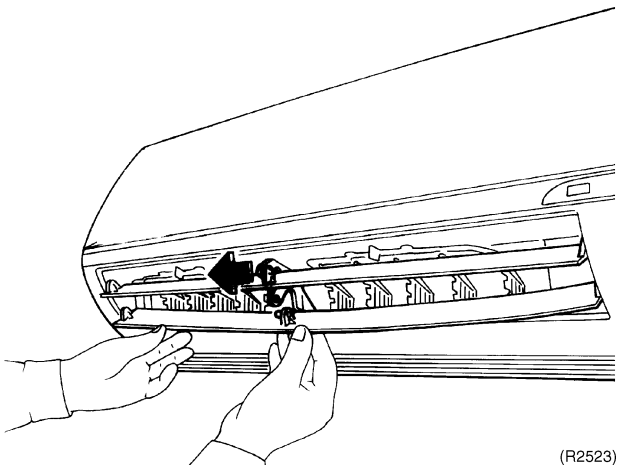
1.3 Removal of Horizontal Blades / Vertical Blades

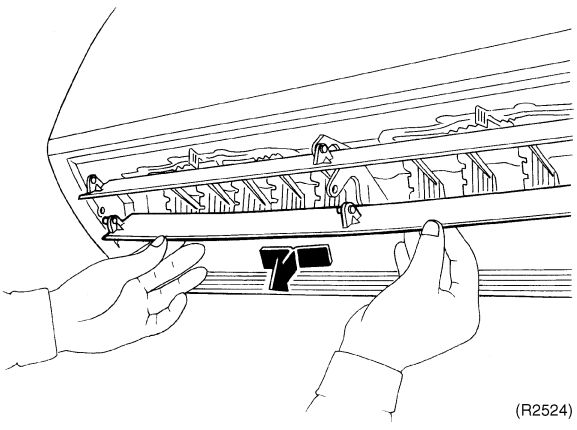
Procedure

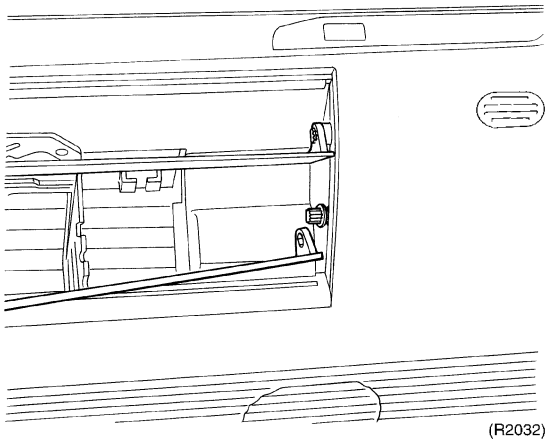
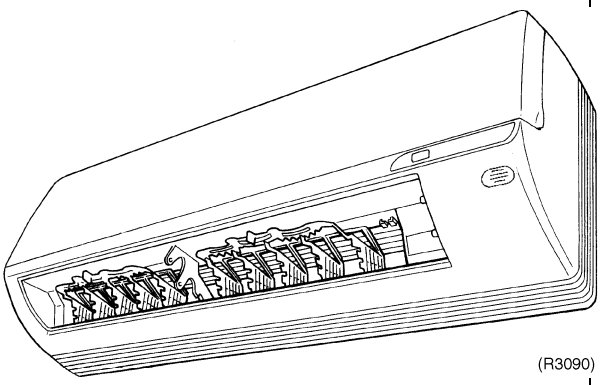
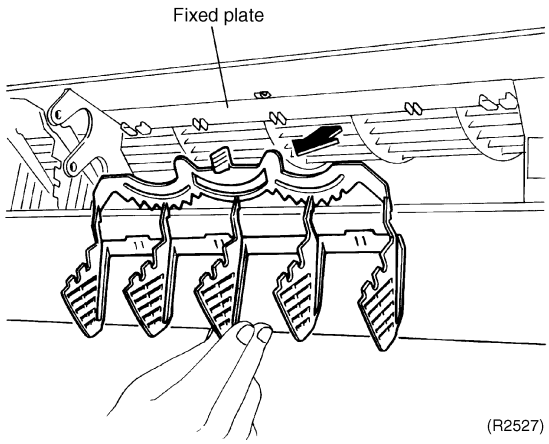
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the horizontal blades.		
1	Lift horizontal blade to open position.	■ Screw stoppers inside the flap which were equipped in the existing models are not provided.
2	Disengage horizontal blade from blade retaining section.	
3	Bend blade slightly and remove it from the unit.	


(R2522)


(R2523)

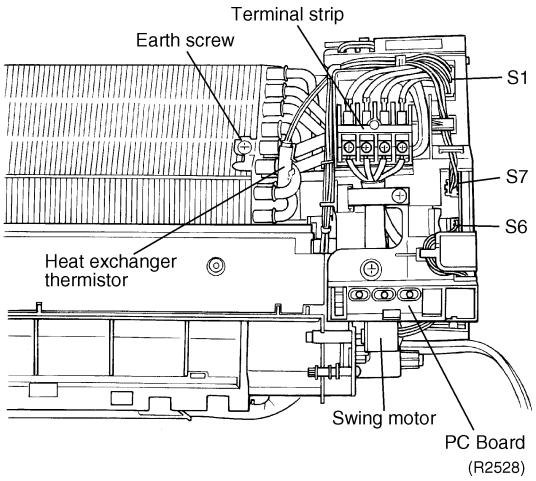
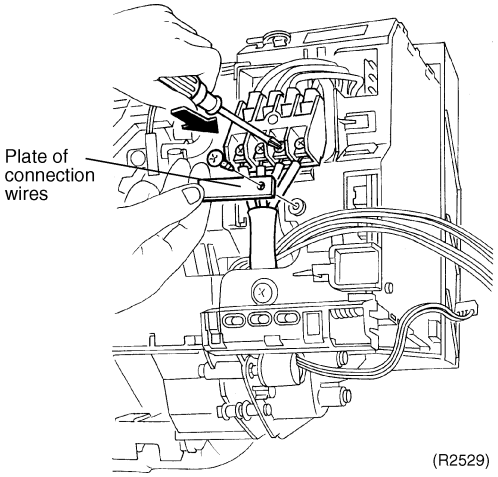
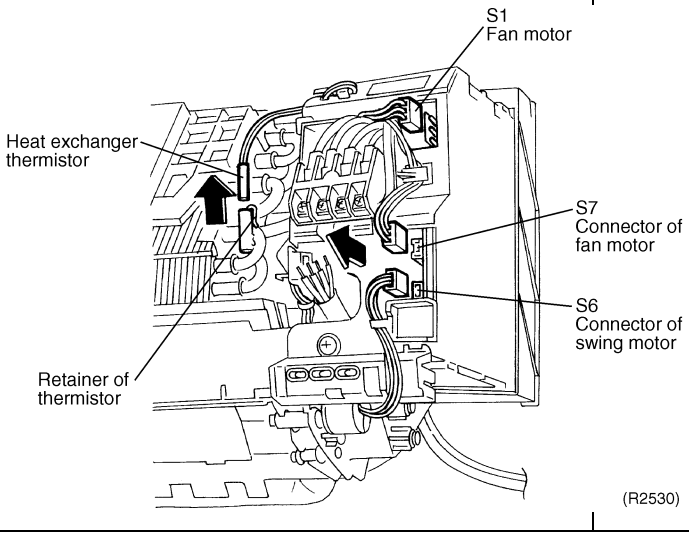

(R2524)

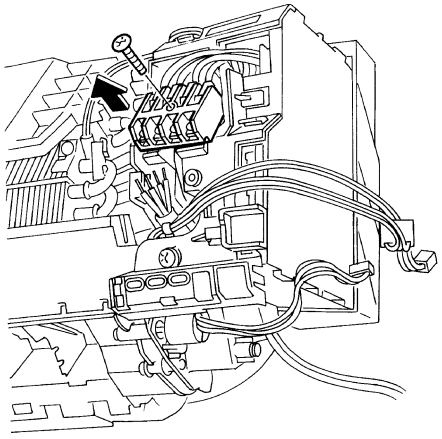
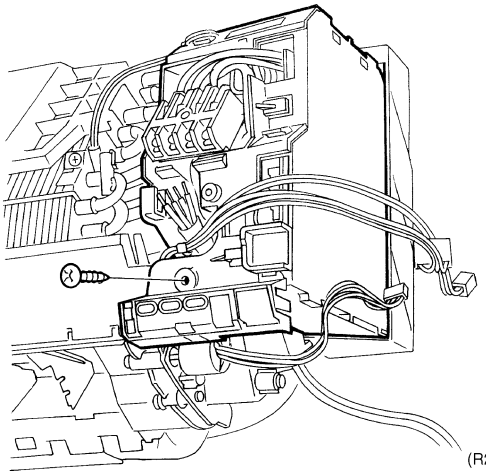
Step	Procedure		Points
		 (R2032)	■ For restoring. 1. Since the key pattern hook is provided on the left side, insert the edge of the blade to the tip while rotating it. 2. Restore the two fixed parts of the horizontal blade onto the hook.
2. Remove the vertical blades.			
1	Disengage the vertical blade's joint from the fixed plate.	 (R3090)	
2	Remove the blade forward.	 (R2527)	■ Five vertical blades are integrated with the joint rod. (so, only one blade can't be exchanged.)

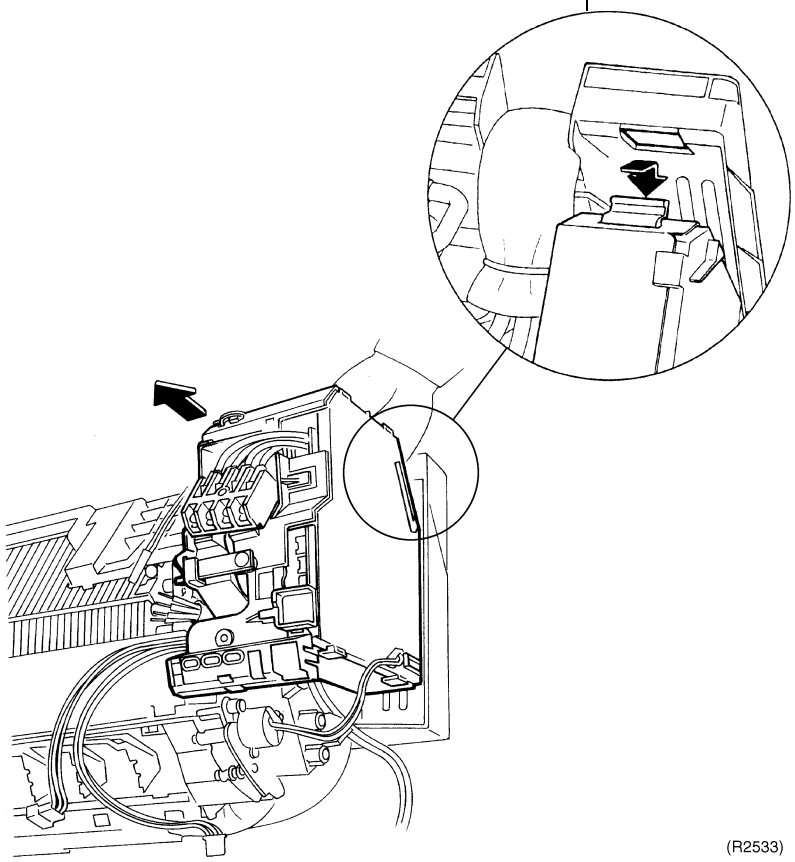
1.4 Removal of Electrical Parts Box / PCB / Swing Motor

Procedure

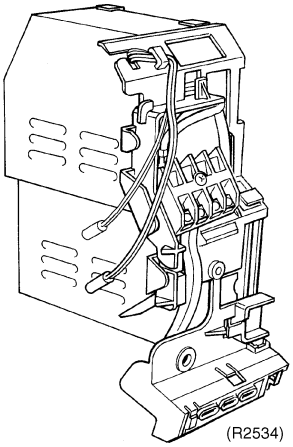
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

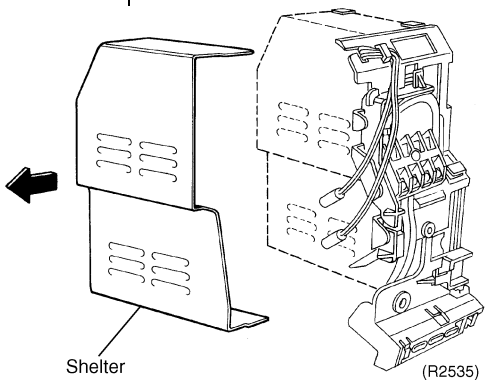
Step	Procedure	Points
■ Remove the front grill.		
1. Remove the electrical parts box. 1 Disconnect the connection wires. 2 Disconnect the connectors of fan motor (S1 and S7). 3 Disconnect the connector of swing motor (S6). 4 Remove heat exchanger thermistor.	 	■ Pay attention to the direction of the retainer of the thermistor so that the retainer will not touch the harness (same as the existing models.)

Step	Procedure		Points
5	Remove a screw on the terminal strip.	 (R2531)	■ The electrical parts box can be removed instead of disengaging the terminal strip.
6	Remove a screw on the electrical parts box.	 (R2532)	

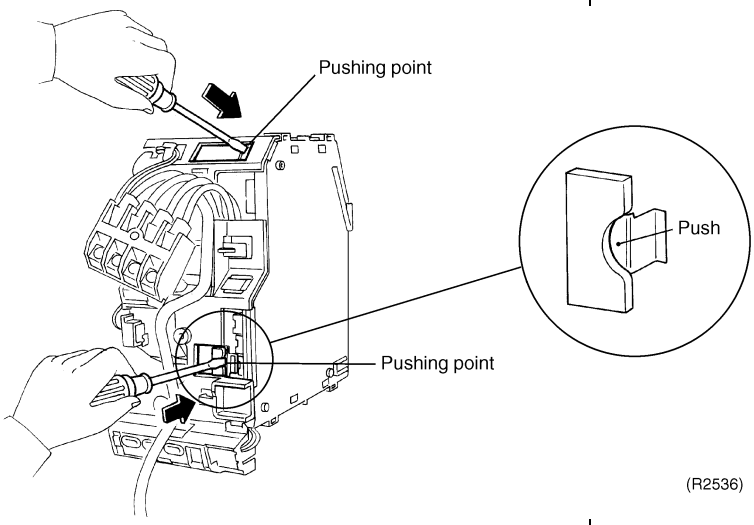
Step	Procedure		Points
7	Pull up the electrical parts box forward to remove.	 (R2533)	■ A hook is provided on the behind.

Step	Procedure	Points
2. Remove the printed circuit board (PCB).		
1	Remove the shelter.	
2	Disengage the front plate of the electrical parts box. Disengage the knobs by pushing the two hooks at the top and the bottom.	
3	Sliding to the left, the front part of the electrical parts box can be removed.	

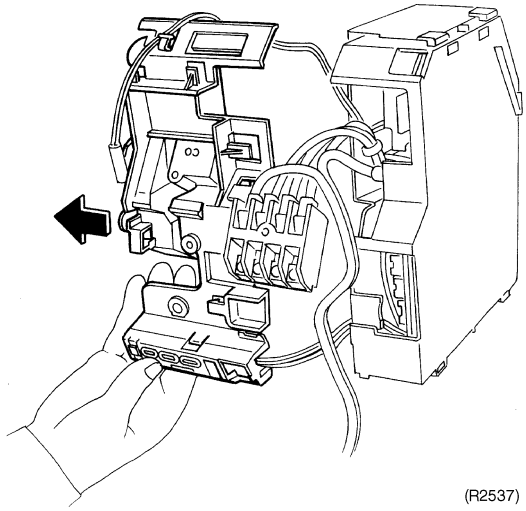

(R2534)

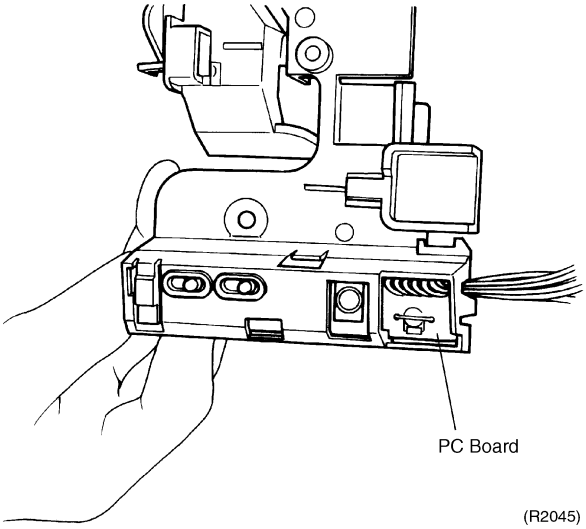
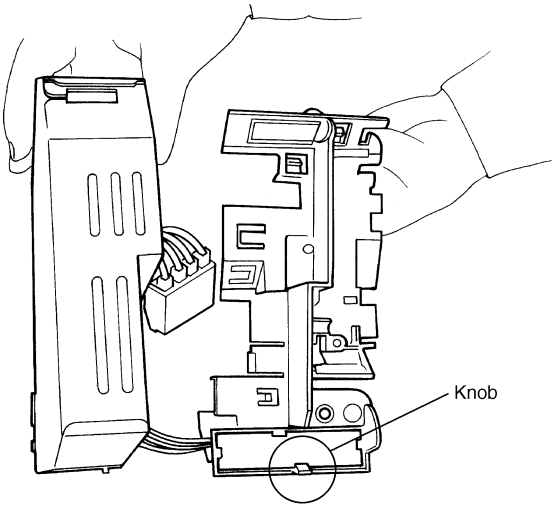
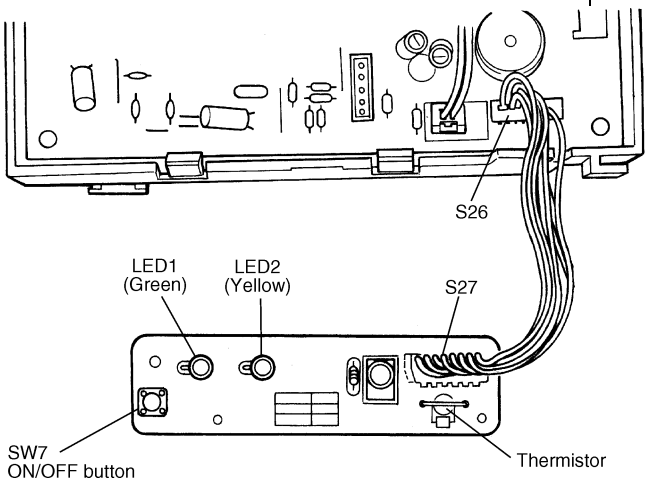


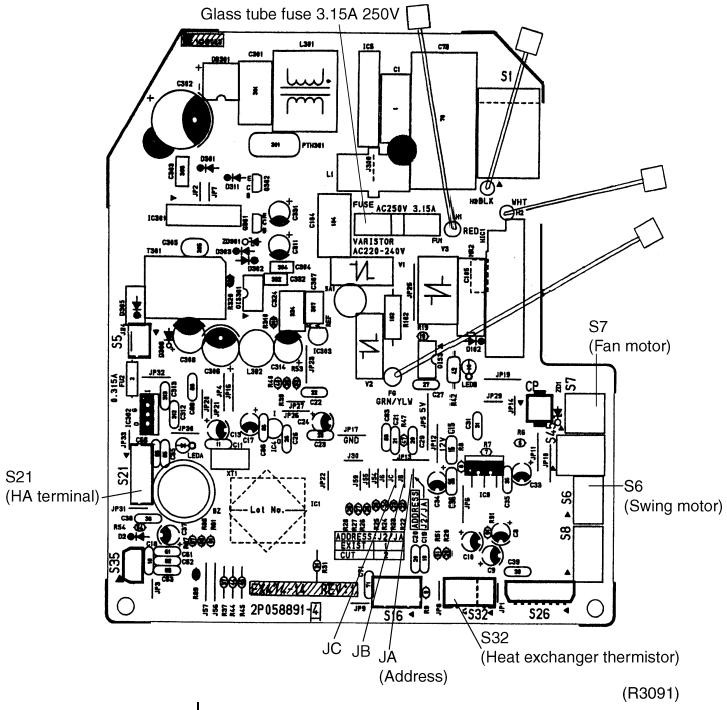
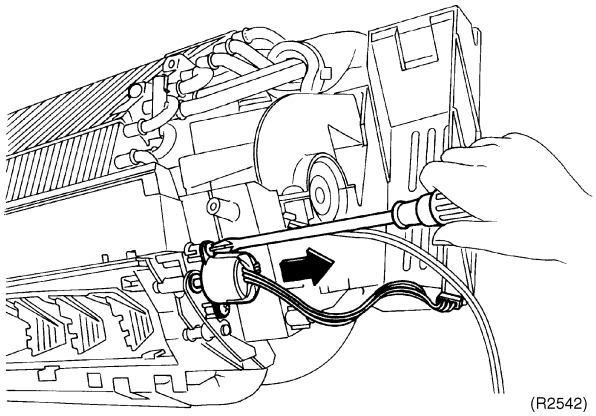
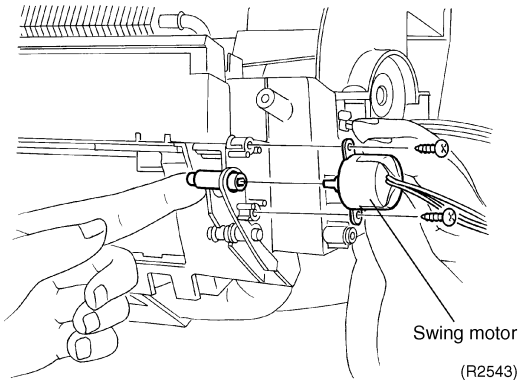
(R2535)



(R2536)


(R2537)

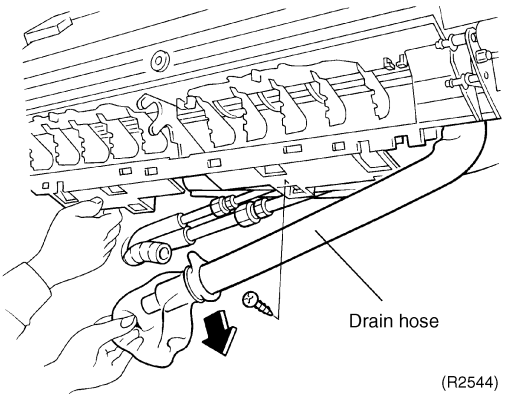
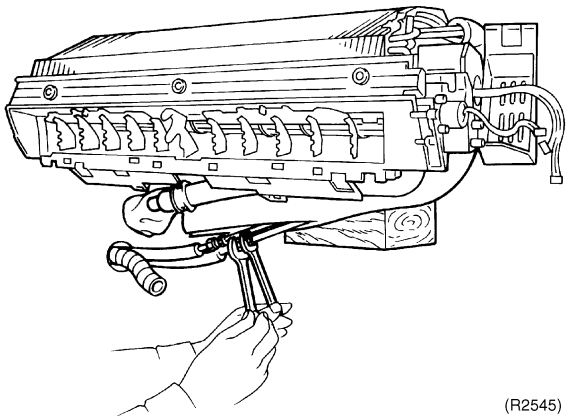
Step	Procedure	Points
	 (R2045)	
4	Disengage the four knobs on the back of the signal receiver PCB.	
	 (R2539)	
5	Signal receiver PCB	
	 (R2047)	

Step	Procedure	Points
6	Control PCB	■ The control printed circuit board is integrated with the power supply printed circuit board.
	 (R3091)	
3. Remove the swing motor assembly.		
1	To remove swing motor assembly, remove two screws. (Manual adjusting for the vertical blades.)	
	 (R2542)	■ Provide a supporter so that the joint link will not drop off, in case the horizontal blade assembly is removed.
	 (R2543)	

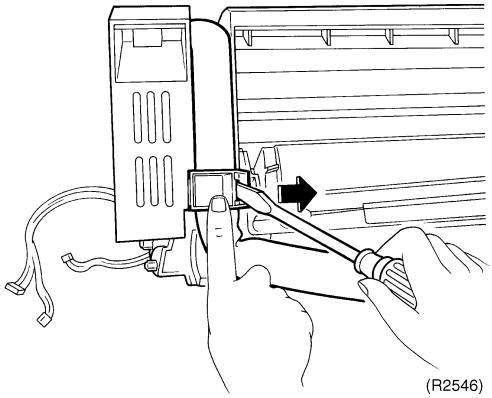
1.5 Removal of Heat Exchanger

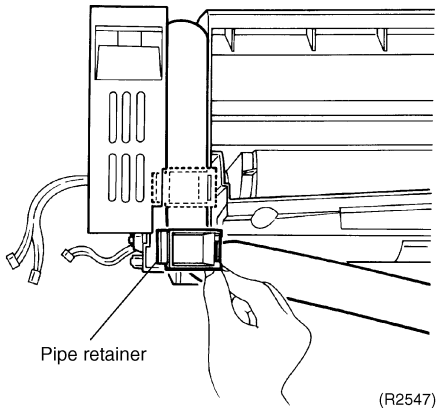
Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

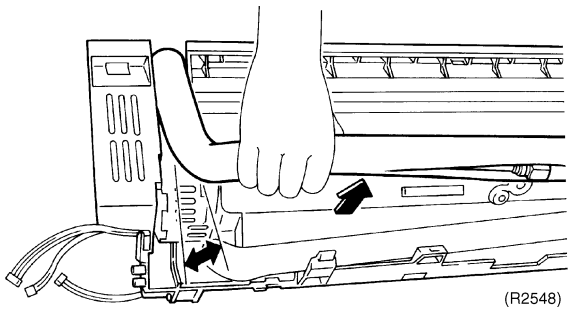
Step	Procedure		Points
	■ Conduct pump-down operation. ■ Remove the installation frame from the mounting plate.		**Warning!** **If gas leaks, repair the leak location, then connect all refrigerant from the unit. Conduct vacuum drying, and charge proper amount of refrigerant.** **Warning!** **Do not mix any gas (including air) other than the specified refrigerant (R22) into refrigerating cycle. (Mixing of air or other gas causes abnormal temperature rise in refrigerating cycle, and this results in pipe rupture or personal injuries.)**
1	Remove the drain hose. Make curing so that the residual drain water will not leak out.	 (R2544)	■ Pay attention so that the residual drain will not make a floor dirty. ■ In case that a drain hose is buried inside a wall, remove it after the drain hose in the wall is pulled out.
2	Disengage the insulation tube and disconnect the flare nuts for the gas piping and the liquid piping.	 (R2545)	■ Use two wrenches to disconnect pipe. ■ After pipes are disconnected, close all pipe openings with caps to prevent dust and moisture from entering pipes.
3	Disengage the indoor unit from the installation plate.		

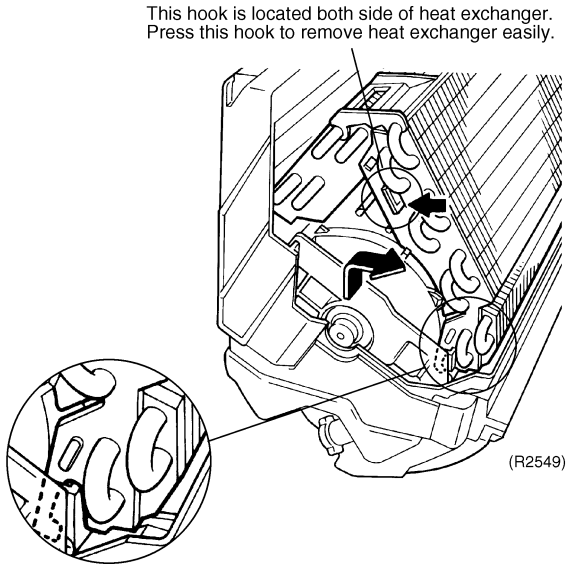
Step	Procedure	Points
4	Disengage the hooks of the pipe retainer on the back.	
5	Pull auxiliary pipe forward to an angle of 10 to 20 degrees.	■ Be careful to prevent pipe deformation.
6	Disengage hooks located right and left side, and pull heat exchanger forward. The hooks are symmetrically placed in the right and the left.	■ Lift the heat exchanger slightly upward to the right, and the left hook comes to be disengaged easily.


(R2546)

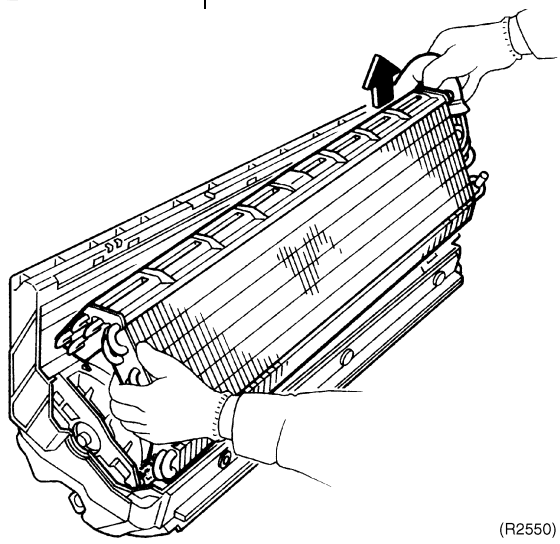


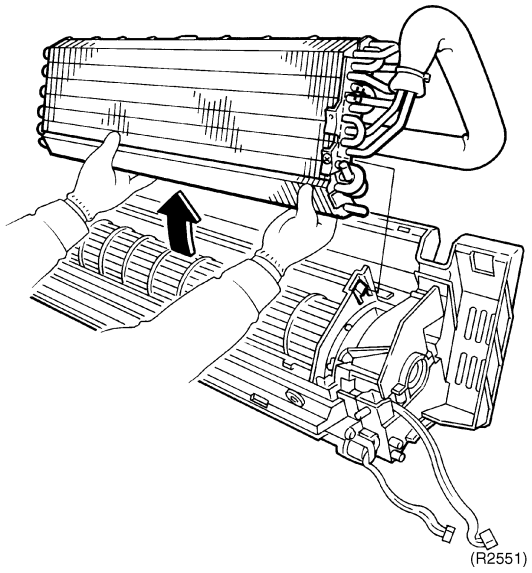
(R2547)


(R2548)



(R2549)

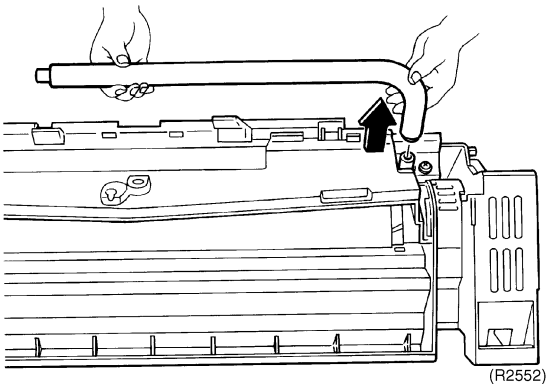
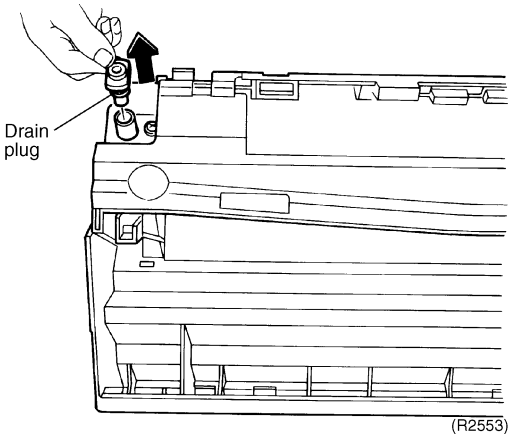
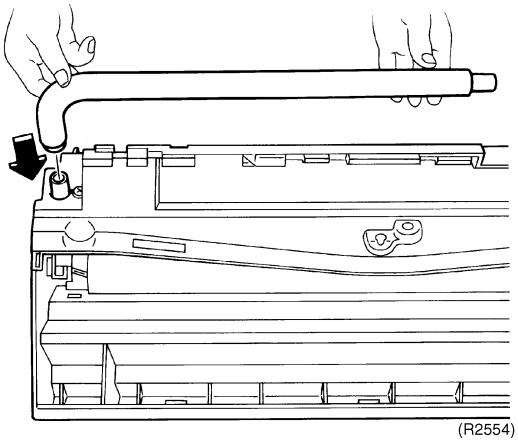
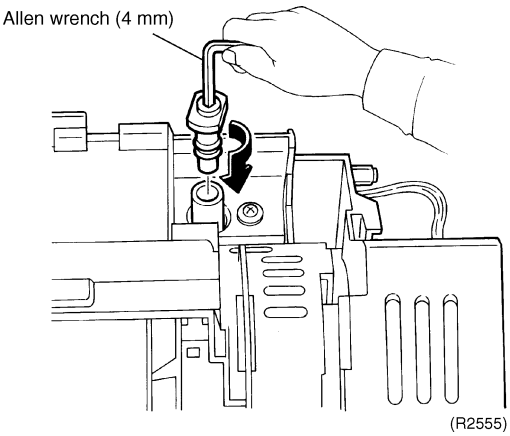

(R2550)

Step	Procedure		Points
7	Lift and remove heat exchanger.	 (R2551)	**Caution!** **When removing or re-installing heat exchanger, be sure to wear protective gloves or wrap heat exchanger with cloths. (Fins can cut fingers.)**

1.6 Install of Drain Plug

Procedure

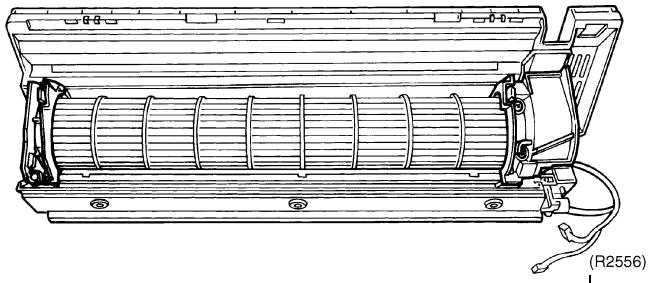
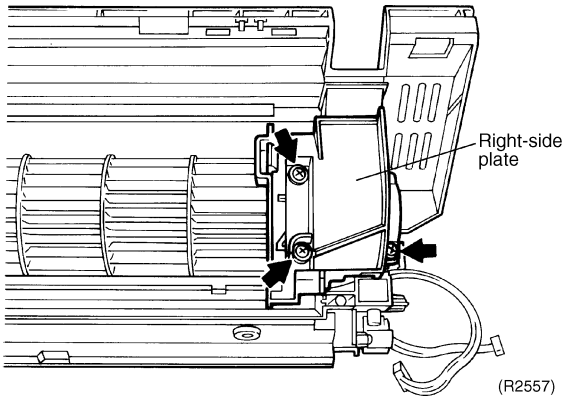
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

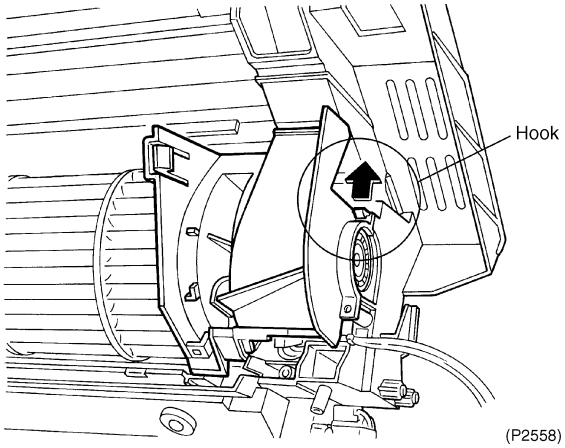
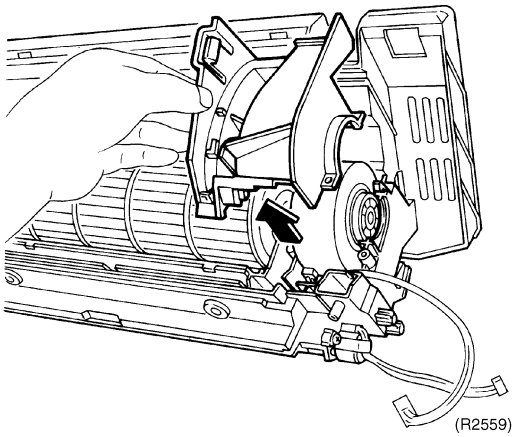
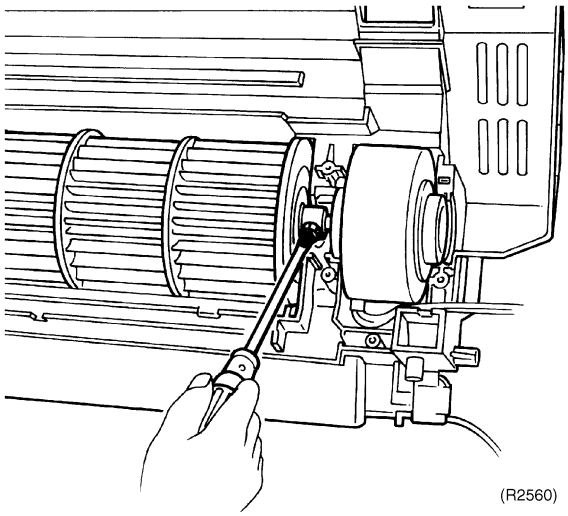
Step	Procedure		Points
1	Disconnect drain hose.	 (R2552)	■ The drain pan is integrated with the bottom plate.
2	Pull out the drain plug in the left on the drain pan by hand.	 (R2553)	
3	Insert the drain hose,	 (R2554)	■ Push it into the inner part firmly.
4	Push the drain plug into the right by Allen wrench.	 (R2555)	■ Push it into the inner part firmly.

1.7 Removal of Fan Rotor / Fan Motor

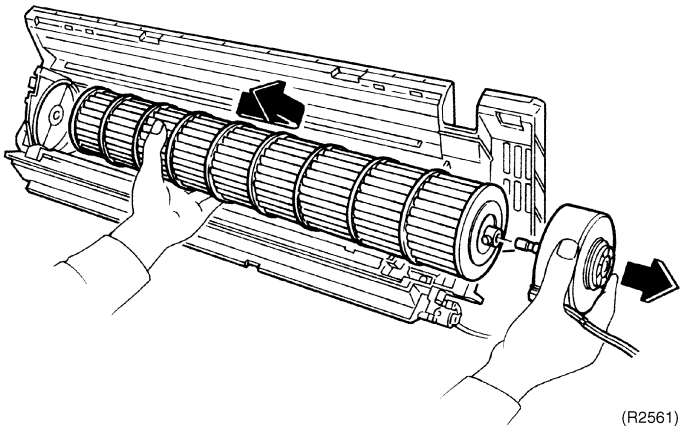
Procedure

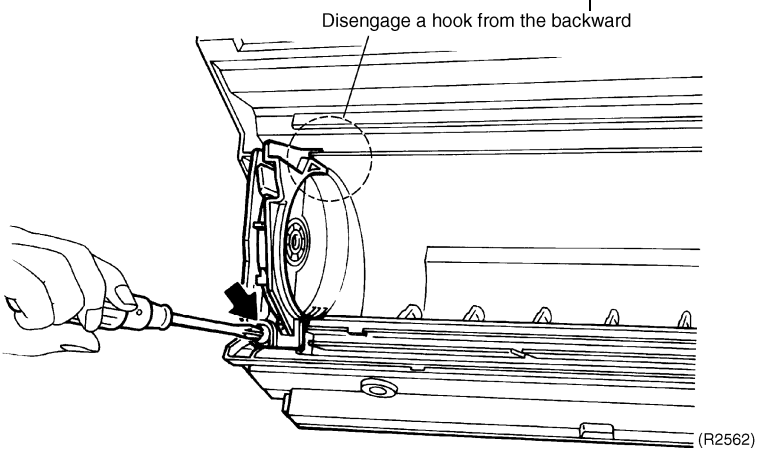
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

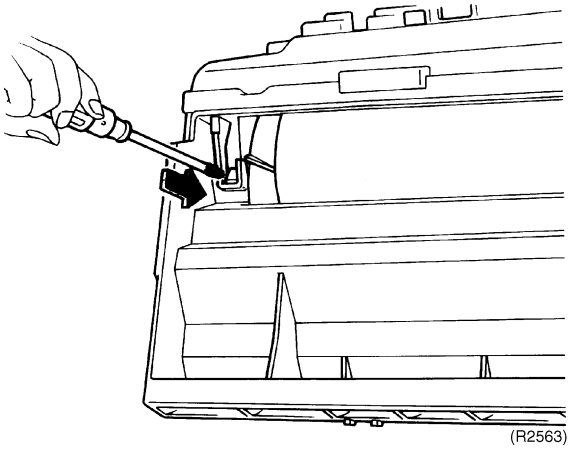
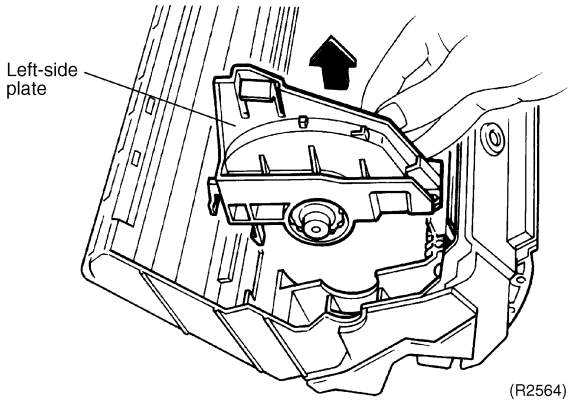
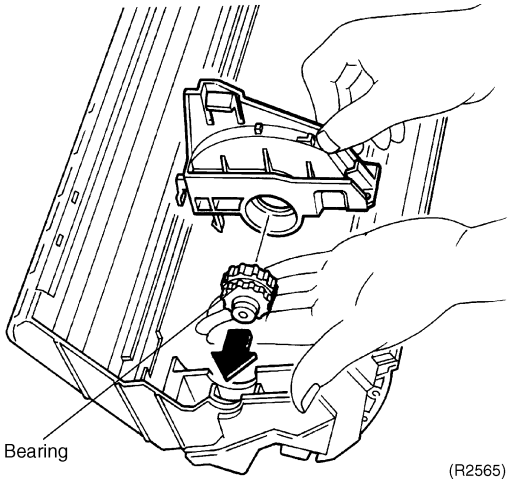
Step	Procedure	Points
■ Remove the heat exchanger.	 (R2556)	
1 To remove right side panel, remove three screws.	 (R2557)	

Step	Procedure		Points
2	Disengage hook.	 (P2558)  (R2559)	
3	Loosen the hexagon head set screw on the fan rotor.	 (R2560)	

Step	Procedure	Points
4	Remove the motor and fan rotor.	
5	Remove a screw on the left side panel.	





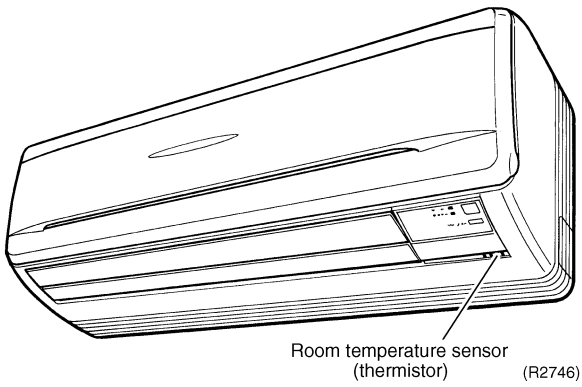
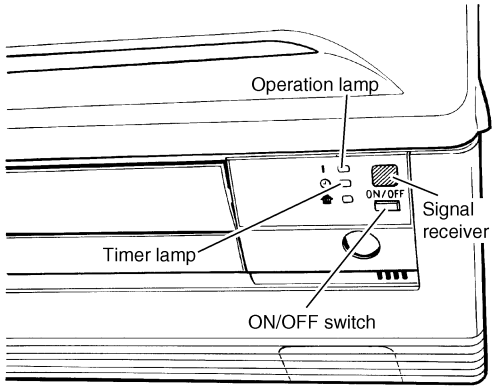
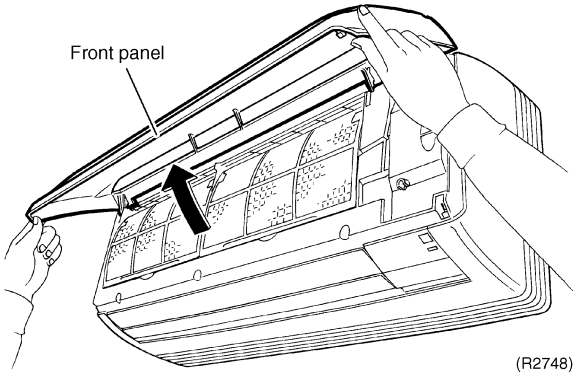
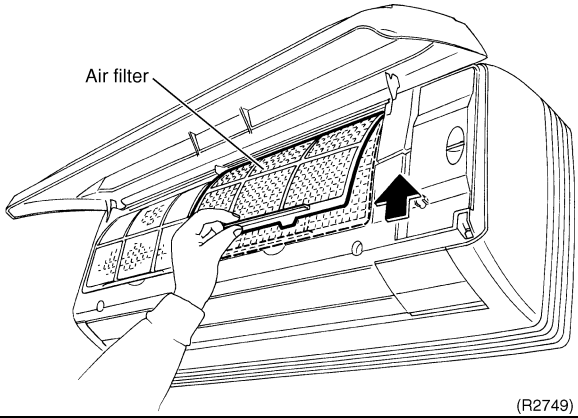
Step	Procedure		Points
6	Disengage a hook from the backward.	 (R2563)	
		 (R2564)	
7	Since the fan bearing is made of rubber, push it strongly off from the inside. The bearing can be removed just as the left-side plate is attached with.	 (R2565)	

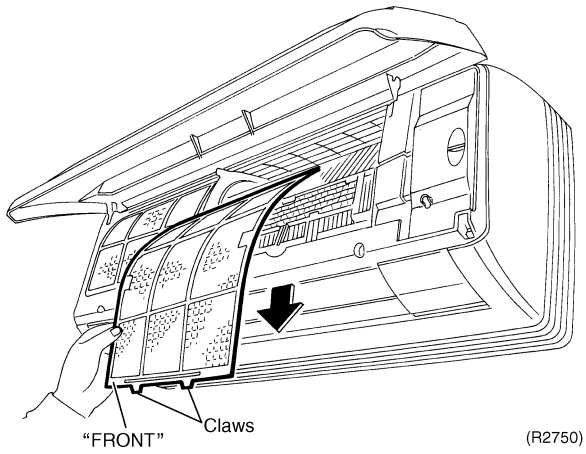
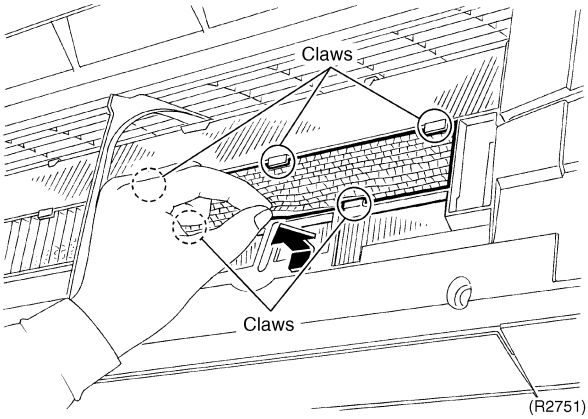
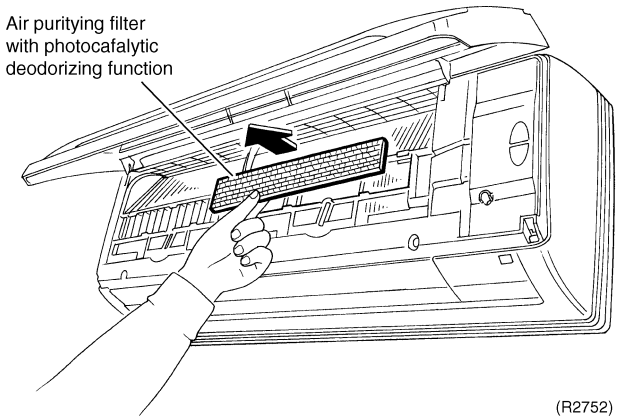
2. FT50/60CV1A

2.1 Removal of Air Filter / Front Panel

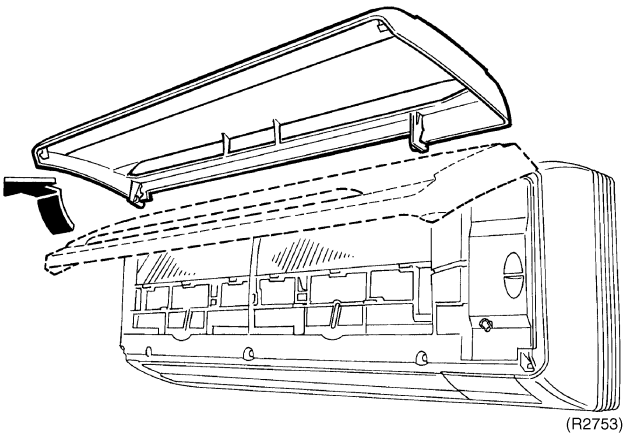
Procedure

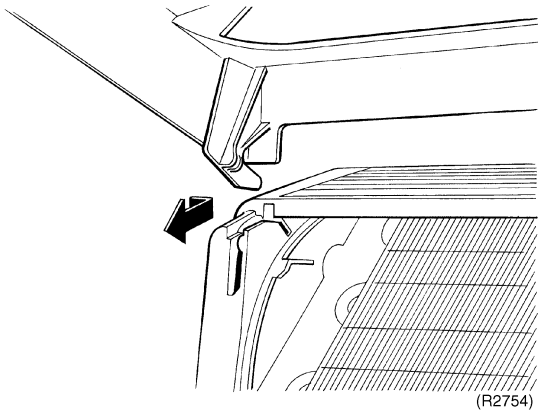
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

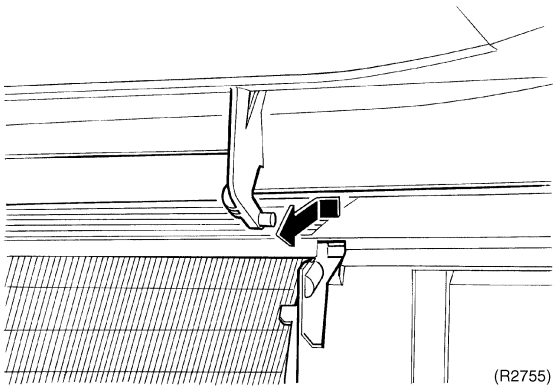
Step	Procedure	Points
1. Features	 (R2746)  (R2747)	■ When the signal receiver catches a signal from the remote controller, it produces beep sound and the operation lamp blinks.
2. Remove the air filters.		
1 Hold the front panel by the tabs on the both sides and lift it until it stops with a click.	 (R2748)	
2 Lift an air filter upwards slightly by the center knob, and then pull it out downwards.	 (R2749)	

Step	Procedure		Points
			■ The right and left filters are interchangeable. ■ Insert the air filters along grooves when installing. ■ Set the air filters with displaying "FRONT" on the front side. ■ Insert two claws of the air filter completely.
3. Remove an "air purifying filter with photocatalytic deodorizing function".			
1	Push up the bottom of an air purifying filter to undo the claws (2 on lower, 3 on upper) and take the filter out.	 	■ The right and left filters are interchangeable.

Step	Procedure	Points
4. Remove the front panel.		
1	While opening the front panel further than it stops, release both axes and remove the front panel.	■ Slide the front panel side to side to release each axis. ■ Align the right and left axes with grooves in turn and insert them to the end when installing.


(R2753)

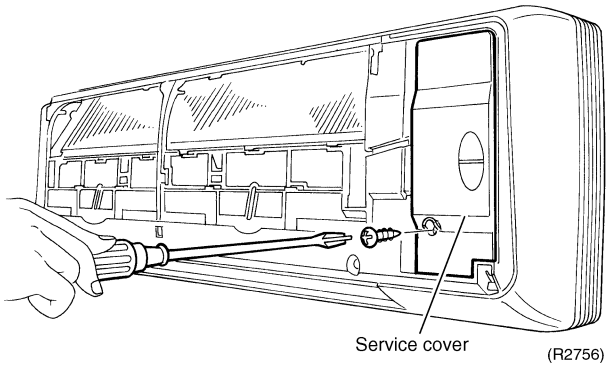
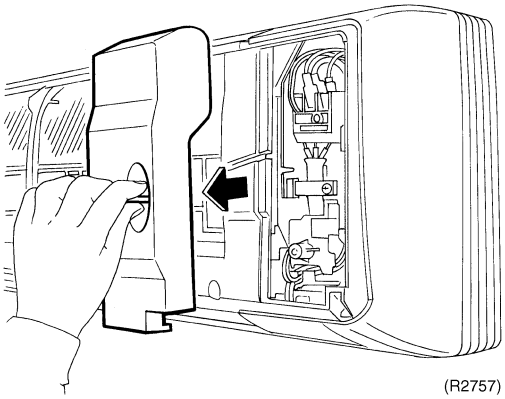
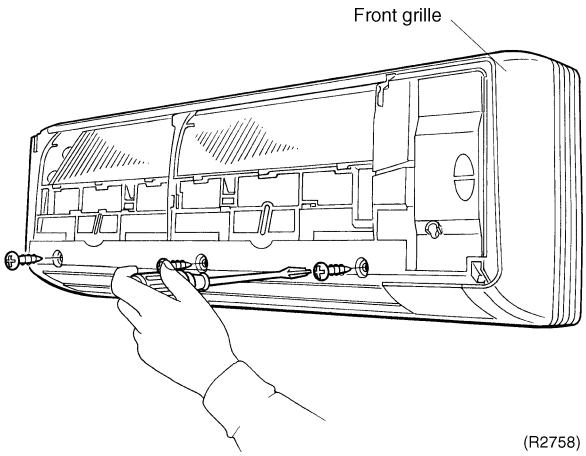

(R2754)

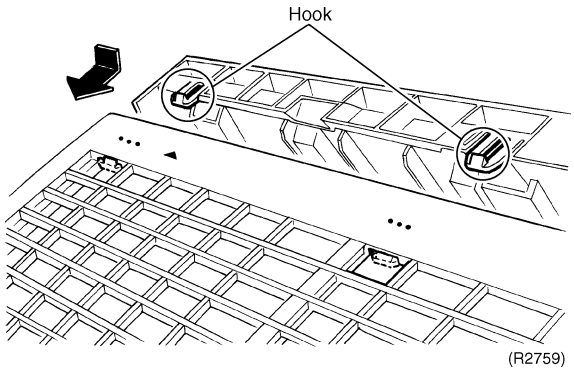
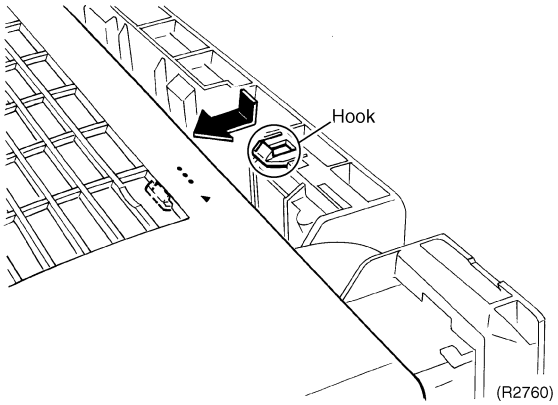
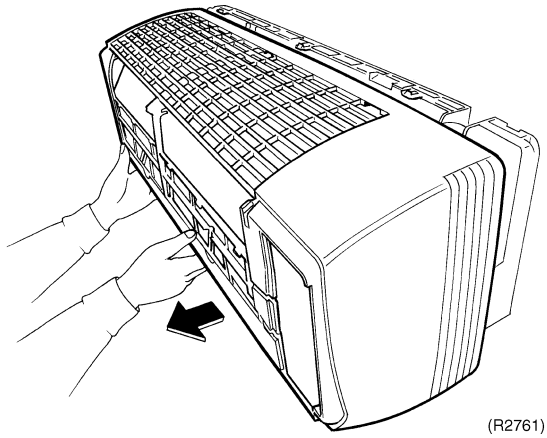
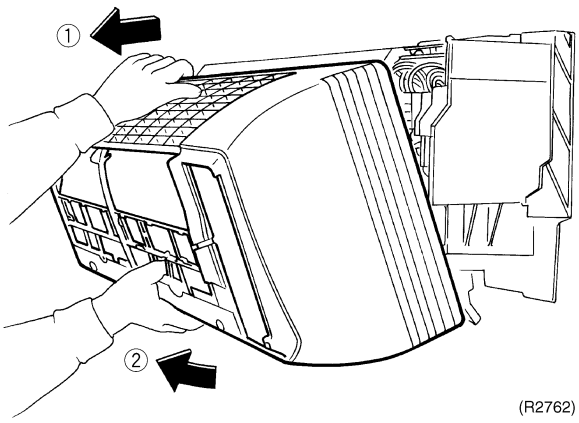

(R2755)

2.2 Removal of Front Grille

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the service cover.		■ No field setting switch is inside it. ■ You can remove the front grille without detaching the service cover.
1 Loosen the screw and remove the service cover by the knob.		
2. Remove the front grille.		■ It has no fixing screws inside blades, though previous models had.
1 Loosen the three fixing screws of the front grille.		

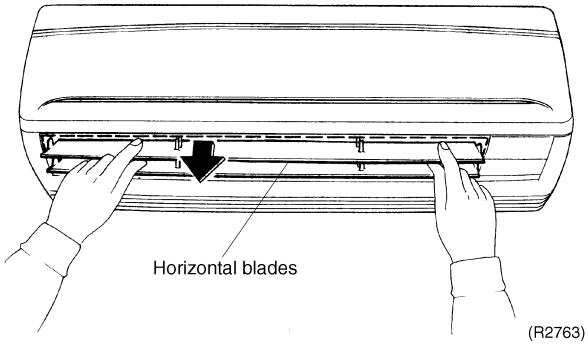
Step	Procedure		Points
2	Undo the three hooks on the top of the front grille.	 (R2759)  (R2760)  (R2761)	■ The front grille has three hooks on the center and the both sides of the upper part. ■ Refer to the removal procedure in a reverse way when reassembling.
3	Pull the upper part of the front grille out and lift the lower part up, and then remove the front grille.	 (R2762)	■ Make sure that all the hooks are placed securely when reassembling.

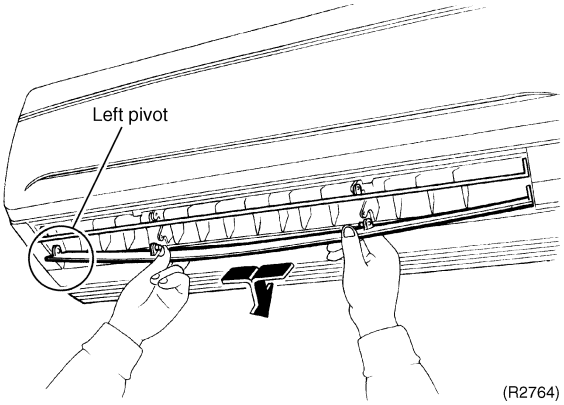
2.3 Removal of Horizontal Blades / Vertical Blades

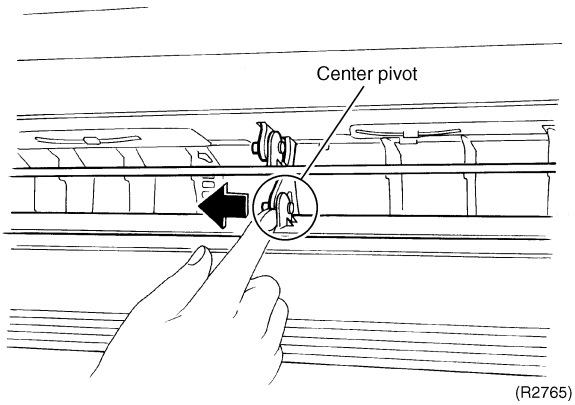
Procedure

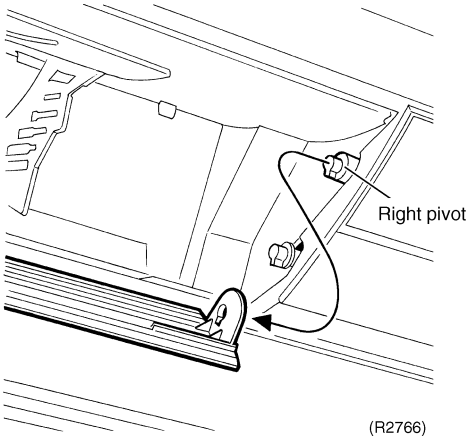
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the horizontal blades.		
1	Open the horizontal blades.	■ It has no fixing screws inside blades, though previous models had.
2	Undo the left pivot of the horizontal blades.	
3	Bend the horizontal blades slightly and release the center pivots. Slide the horizontal blades to the left and release the right pivot.	■ Installation procedure 1. Since key pattern hook is provided, rotate the blades and fit it to the right pivot first. 2. Fit the blades to the center and left pivots.

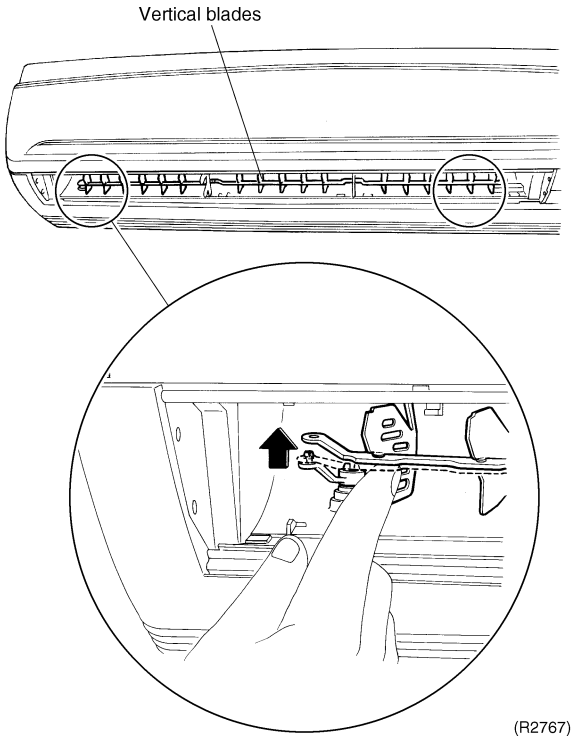


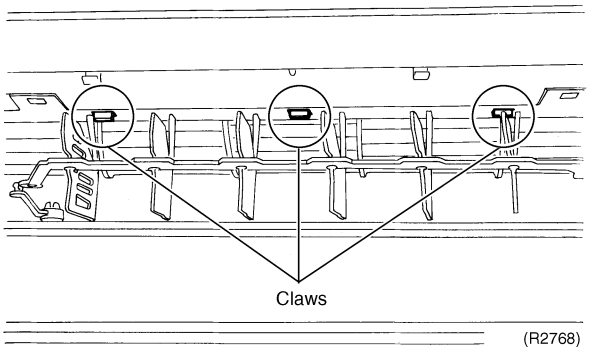


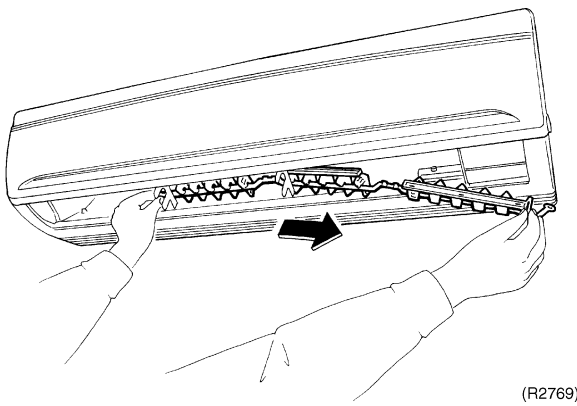




Step	Procedure	Points
2. Remove the vertical blades.		
1	Undo the right and left pivots.	
2	Undo the three claws.	
3	Pull the vertical blades rightwards and remove it.	



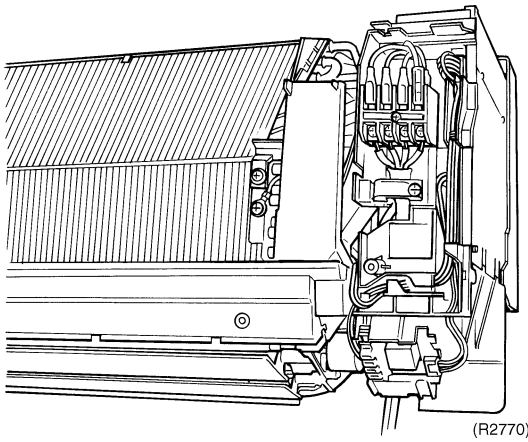
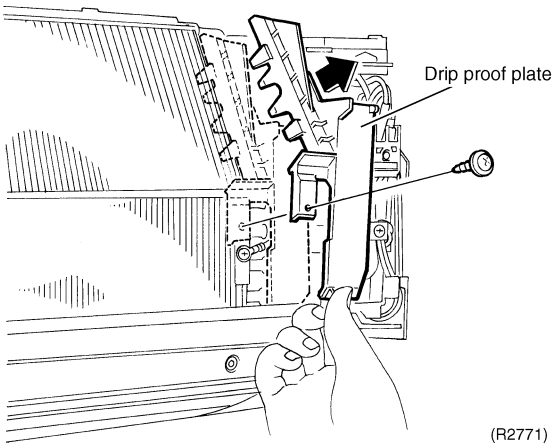
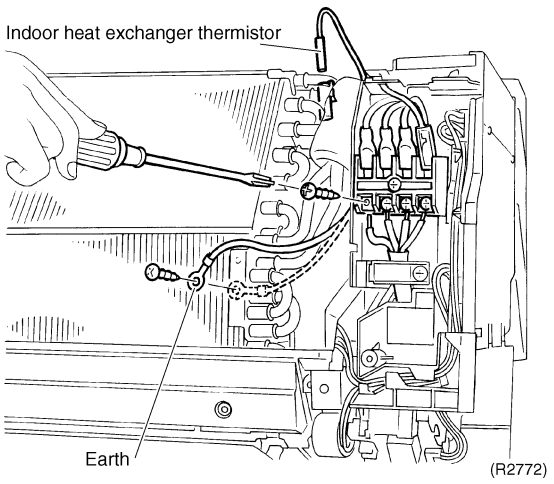




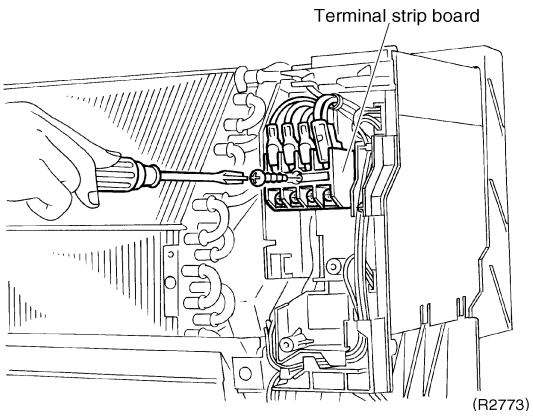
2.4 Removal of Electrical Parts Box / PCB / Swing Motor

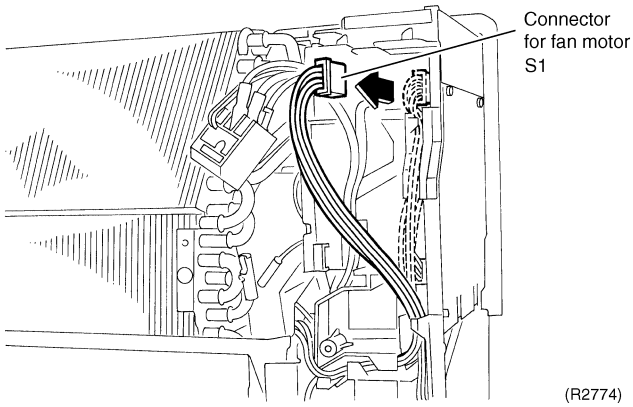
Procedure

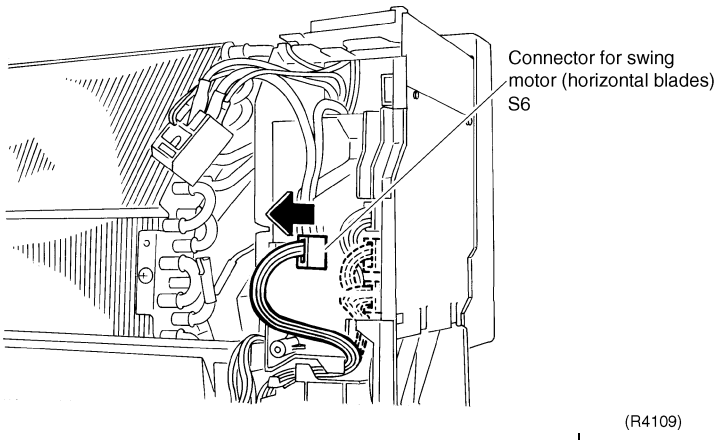
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

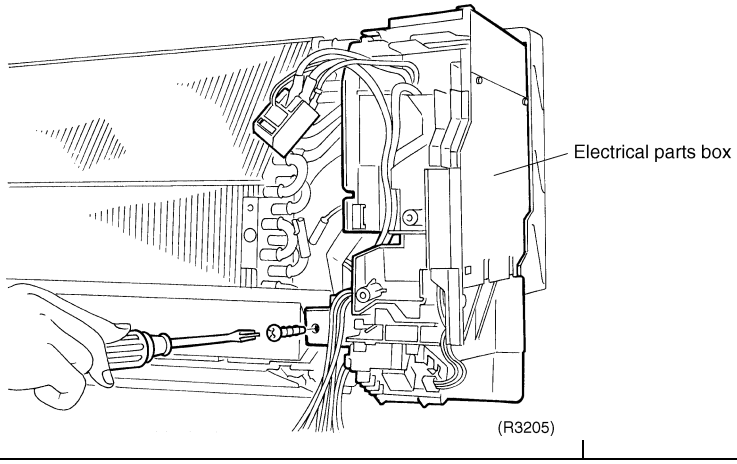
Step	Procedure	Points
1. Remove the front grille.	 (R2770)	■ Parts layout
2. Remove the drip proof plate.		
1 Loosen the screw.	 (R2771)	
3. Disconnect the indoor heat exchanger thermistor and the earth.	 (R2772)	■ Mind that not to lose the clip for the thermistor.

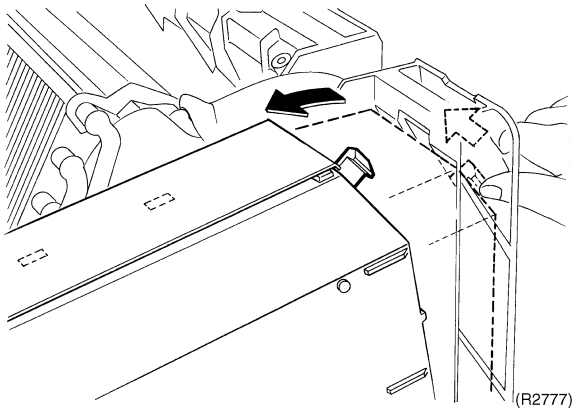
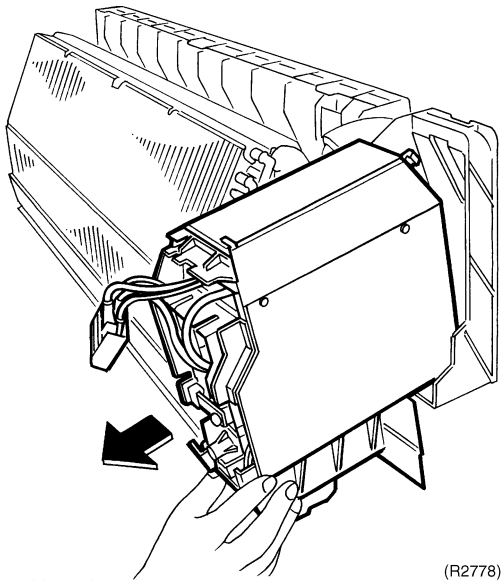
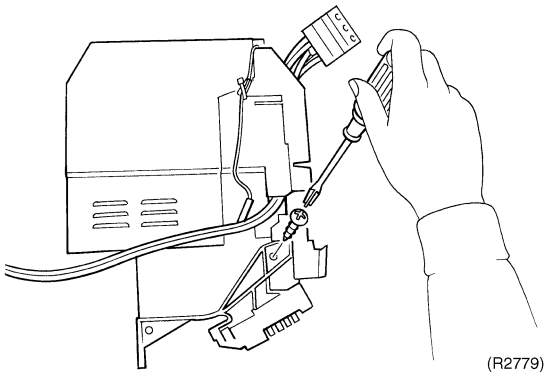
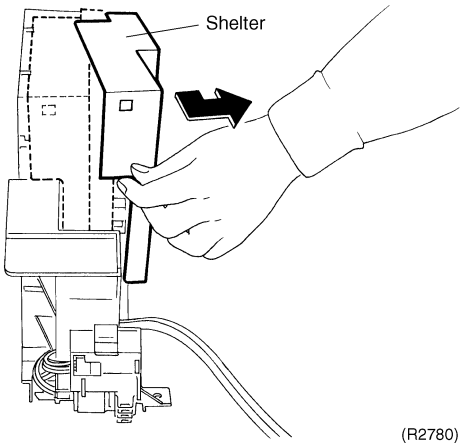
Step	Procedure	Points
4. Remove the electrical parts box.		
1	Disconnect the four connection wirings. Loosen the screw and remove the terminal strip board.	■ You can remove the electrical parts box without detaching the terminal strip board. ■ Screw: M4×25
2	Disconnect the connectors for fan motor (S1).	
3	Disconnect the connectors for swing motor (S6).	
4	Loosen the fixing screw of the electrical parts box.	

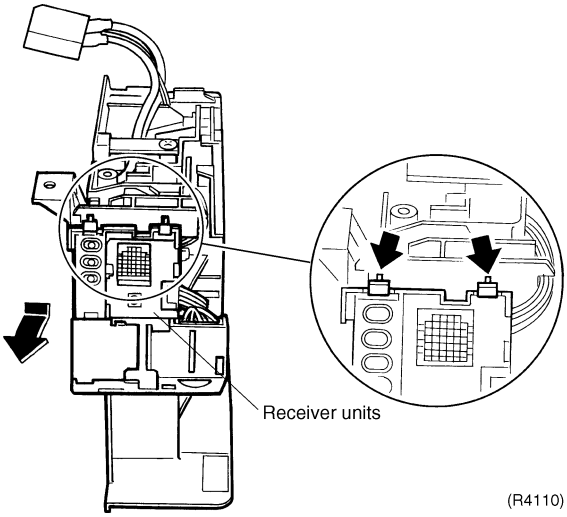
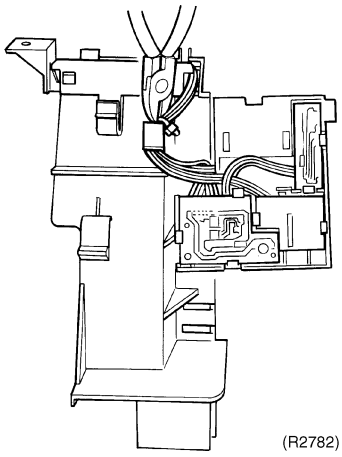
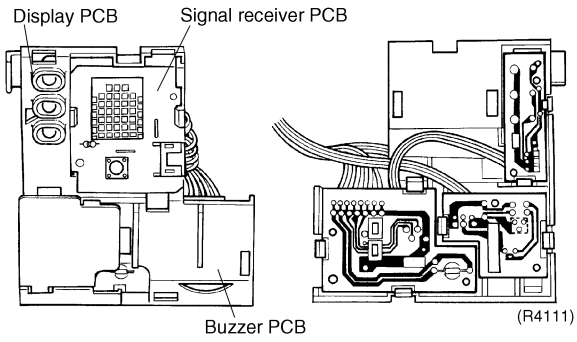
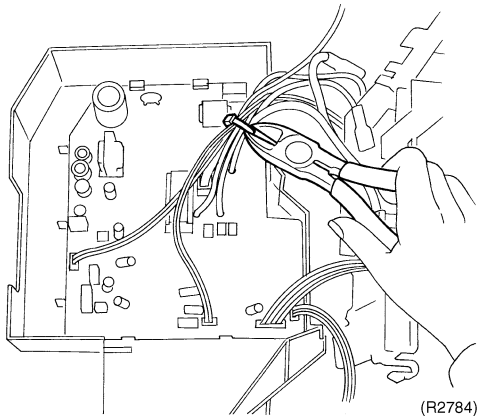




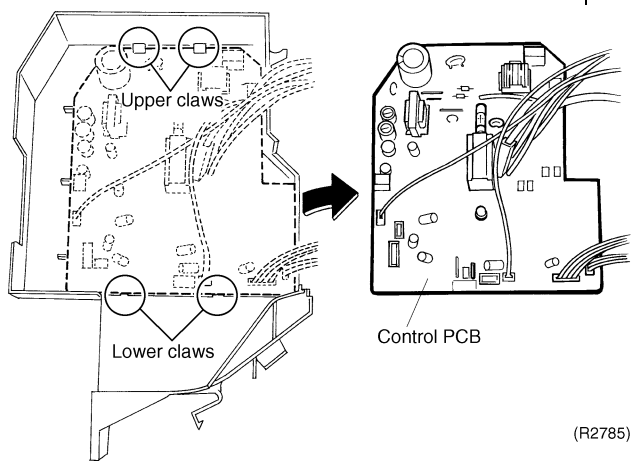


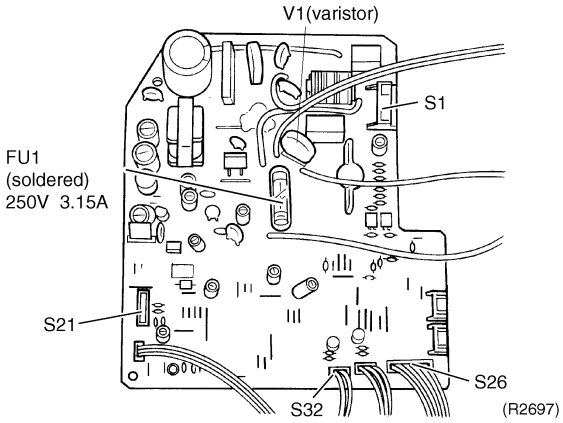


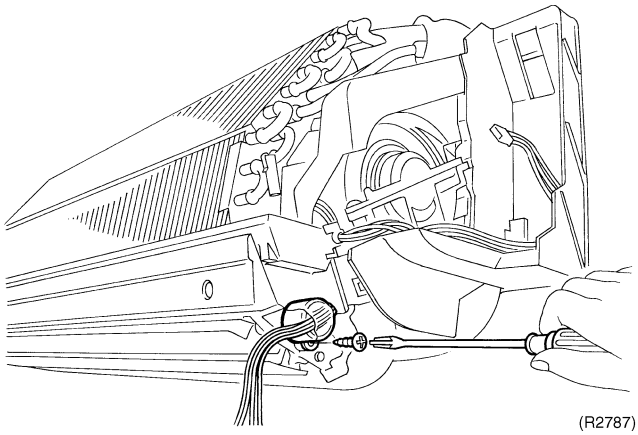
Step	Procedure		Points
5	Dislocate the electrical parts box to the left and undo the back claw.	 (R2777)	■ The electrical parts box has a claw on its back.
6	Pull the electrical parts box out towards you.	 (R2778)	■ Hook the back claw of the electrical parts box when reassembling.
7	Loosen the screw on the electrical parts box.	 (R2779)	■ Screw: M4×16
8	Push the shelter up and undo the claw.	 (R2780)	

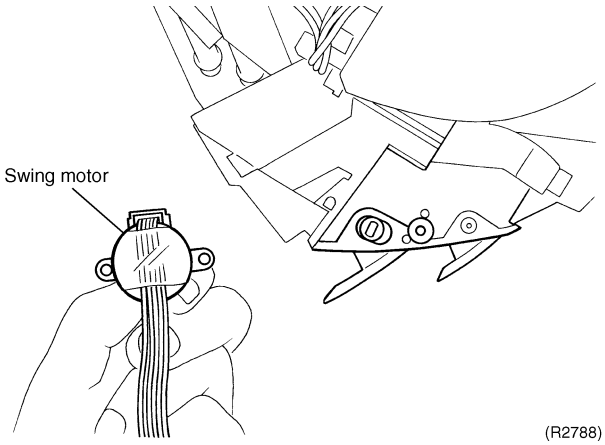
Step	Procedure		Points
9	Press the receiver units down and release the claws on the upper side, and then undo the claws on the lower side.		■ Release the claws on the upper side.
10	Cut the clamp.		
11	The receiver units contain four PCBs. Remove each PCB with releasing claws. Disconnect every connector from each PCB.		■ Remove the receiver units while pushing the claws of connectors.
12	Cut the clamp.		■ Clamps should be always available. Fix it as it was before.

Step	Procedure	Points
5. Remove the control PCB.		
1	Undo the two claws on the lower side, and then the two claws on the upper side. Remove the control PCB.	
2	Control PCB (indoor unit) S1: connector for the fan motor S21: HA S26: connector for the buzzer PCB S32: connector for the heat exchanger thermistor	
6. Remove the swing motor for horizontal blades.		
1	Remove the screw of the swing motor.	







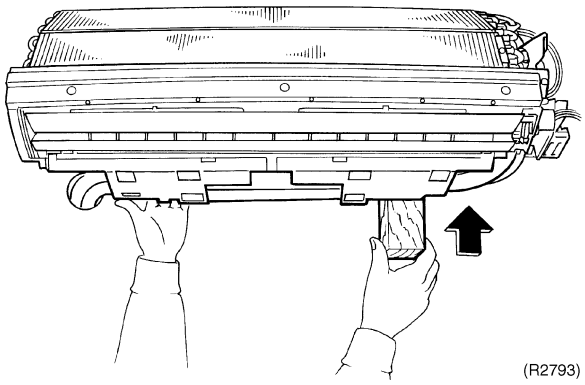


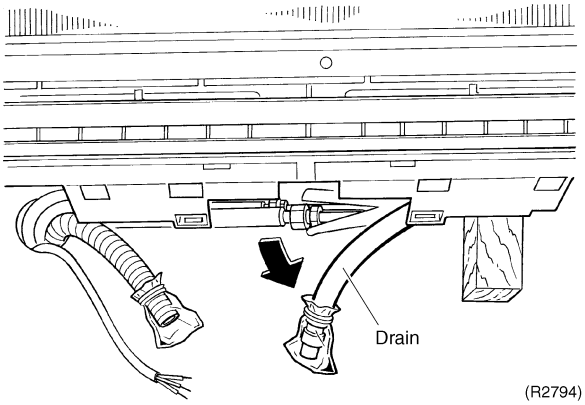
2.5 Removal of Heat Exchanger

Procedure

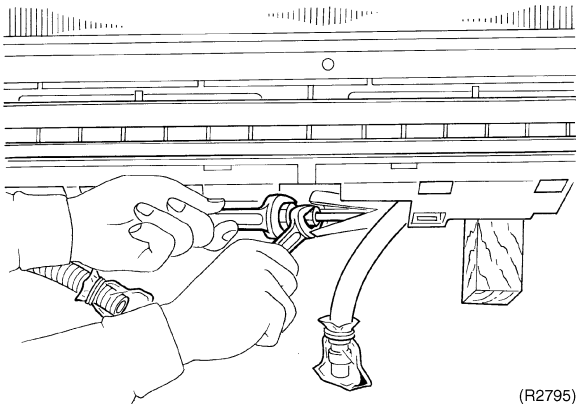
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

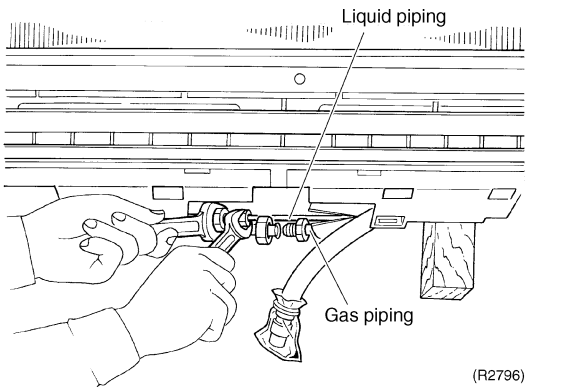
Step	Procedure	Points
■ Remove the electrical box.		
1. Disconnect the refrigerant piping.		
1	Hold the indoor unit up by a piece of wood etc..	**Caution** **If gas leaks, repair the spot of leaking, then collect all refrigerant from the unit. After conducting vacuum drying, recharge proper amount of refrigerant.** **Caution** **Do not contaminate any gas (including air) other than the specified refrigerant (R22 or R410A, depending on the model) into refrigerant cycle. (Contaminating of air or other gas causes abnormal high pressure in refrigerating cycle, and this results in pipe breakage or personal injuries.)**
2	Unscrew the flare nut for gas piping by two wrenches.	■ Pay attention so that the residual water in the drain will not make the floor wet. ■ In case that a drain hose is buried inside a wall, remove it after the drain hose in the wall is pulled out. ■ Use two wrenches to disconnected pipes. ■ When disconnecting pipes, cover every nozzle with caps so as not to let dust and moisture in.
3	Unscrew the flare nut for liquid piping by two wrenches.	


(R2793)

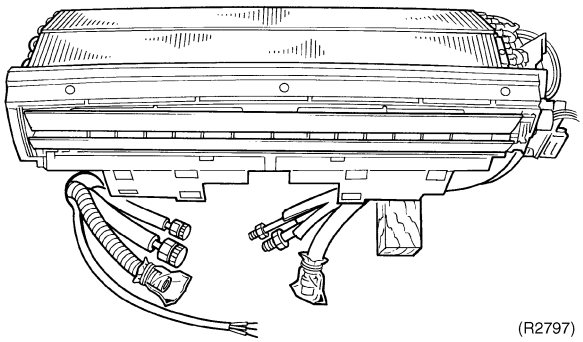
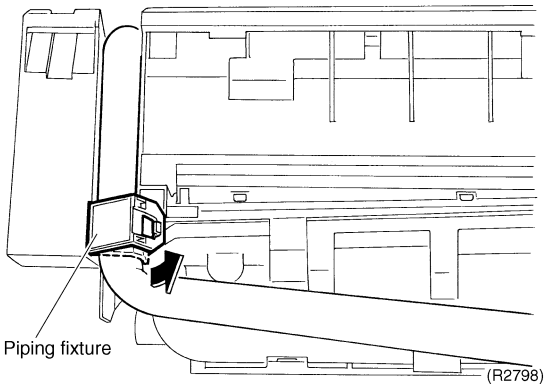
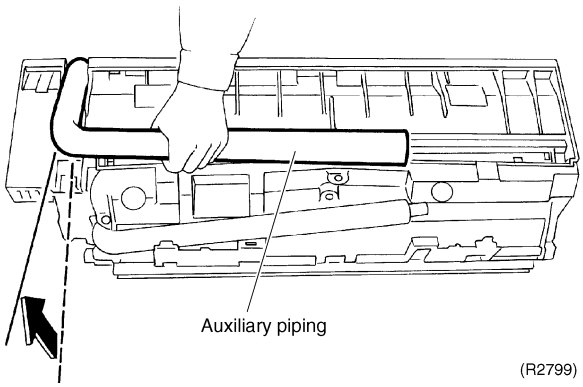


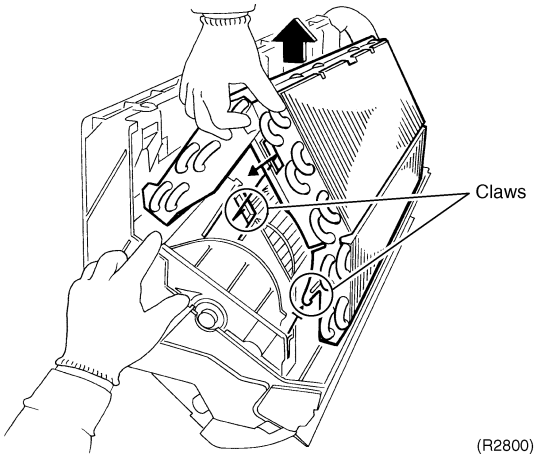
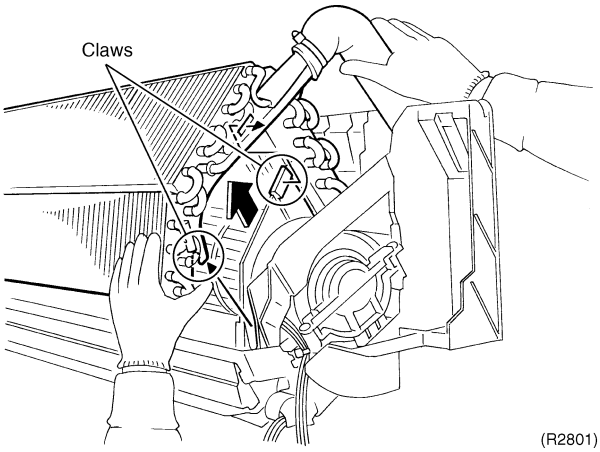
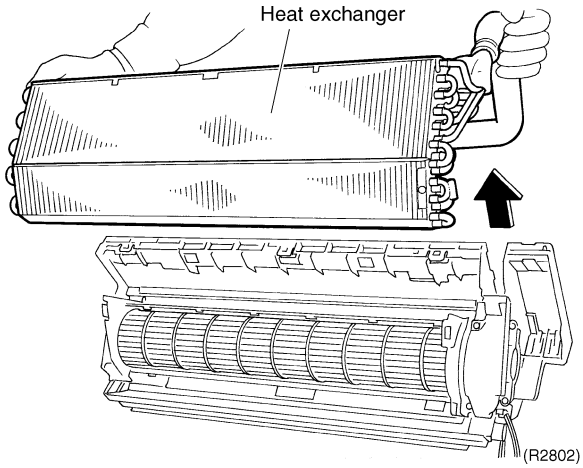
(R2794)


(R2795)



(R2796)

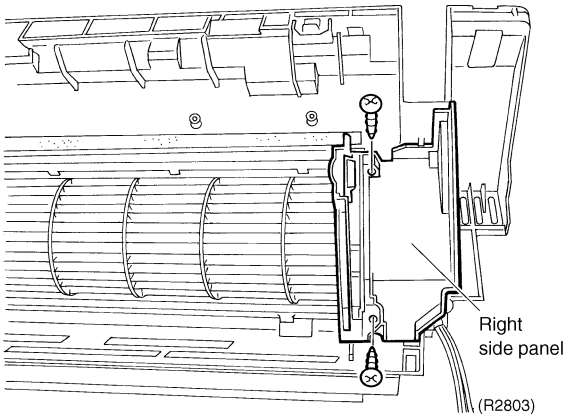
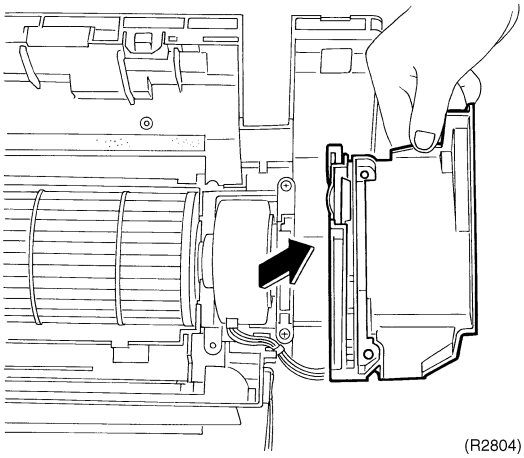
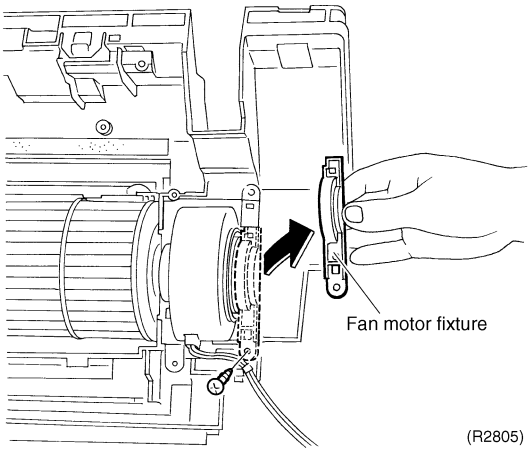
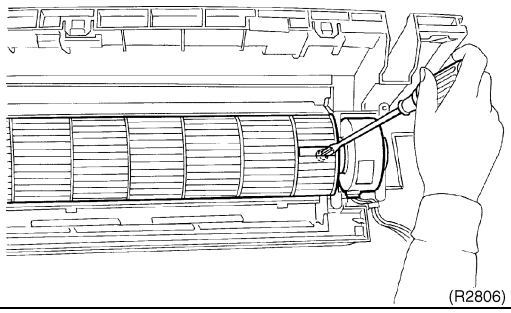
Step	Procedure	Points
2. Remove the indoor unit.	 (R2797)	
1 Detach the indoor unit from the installation plate.		
3. Remove the piping fixture.	 Piping fixture (R2798)	
1 Release the claw on the upper side of the piping fixture on the back of the unit.		
4. Remove the heat exchanger.	 Auxiliary piping (R2799)	
1 Widen the auxiliary piping to the extent of 10°~20°.		■ At an angle of 10°~20°

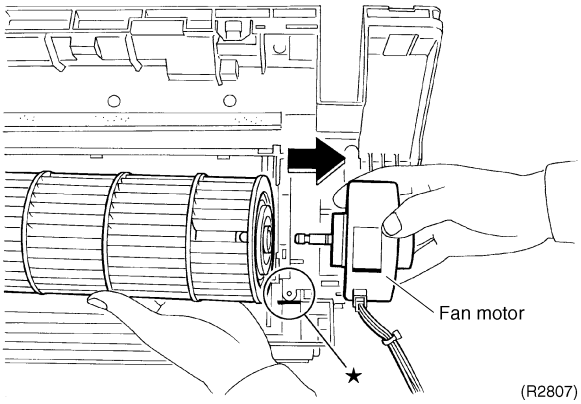
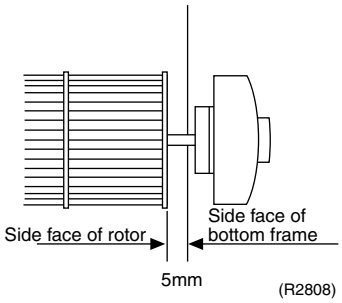
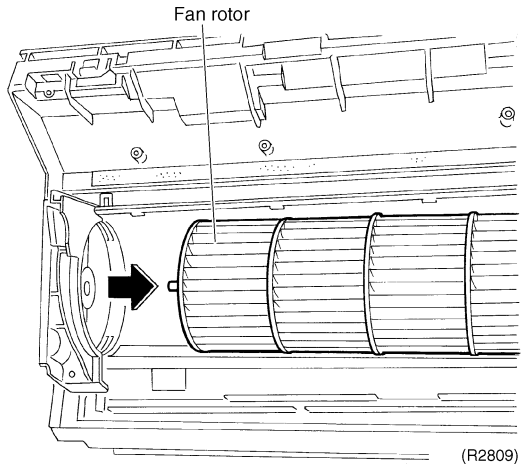
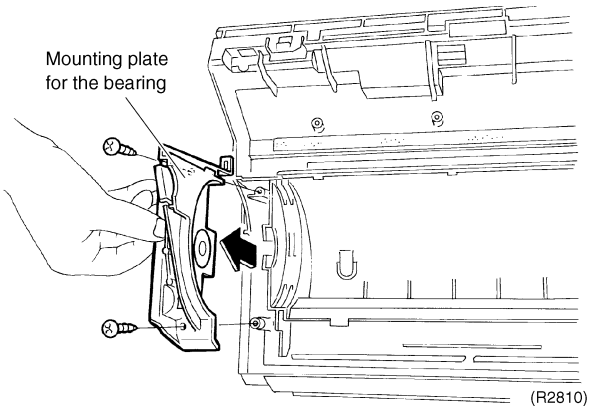
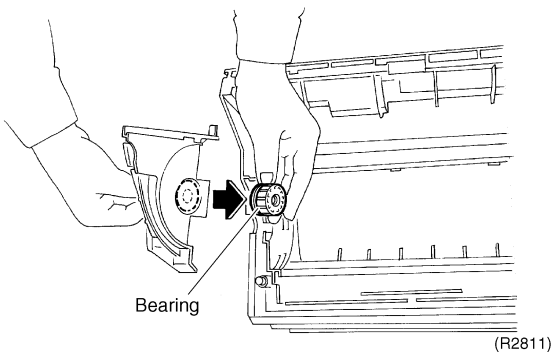
Step	Procedure		Points
2	Release the claws on the left side.		
3	Push the fixing claws on the right side and release.		
4	Pull the heat exchanger to the front side and undo the claws completely, and then lift it.		**Caution** **When removing or reinstalling heat exchanger, be sure to wear protective gloves or wrap the heat exchanger with cloths. (Fins can cut fingers.)**

2.6 Removal of Fan Rotor / Fan Motor

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the right side panel.		■ You can remove the fan rotor without detaching the right side panel.
1	Loosen the two screws.	
2	Lift the right side panel and remove it.	
2. Remove the fan rotor.		
1	Loosen the screw and remove the fan motor fixture.	
2	Loosen the fixing screw of the fan rotor.	

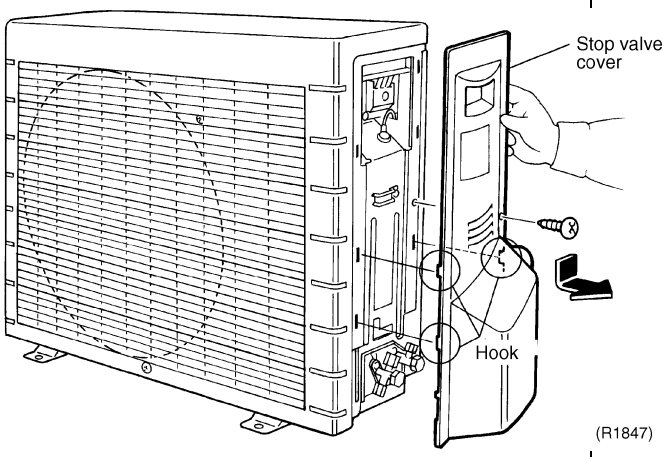
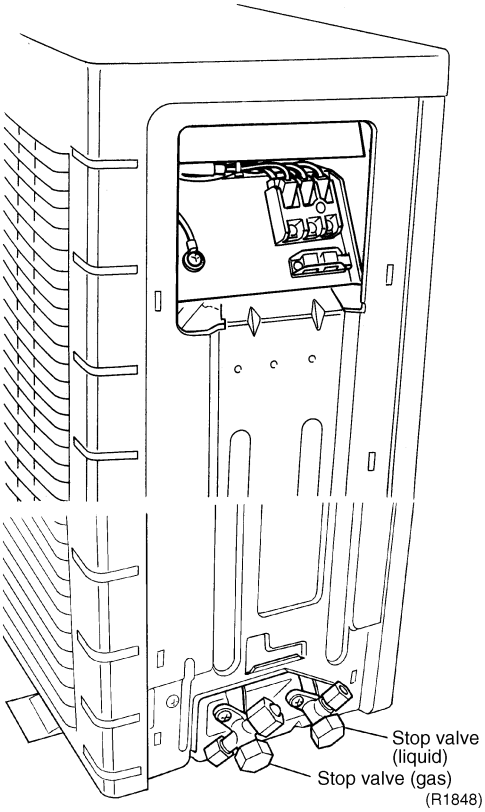
Step	Procedure	Points
3. Remove the fan motor.		■ Reassembling the fan motor (1) When reassembling the fan rotor, provide as much as 5mm of play between the side face of the rotor and the bottom frame.
1 Remove the fan rotor.		
4. Remove the bearing.		(2) When reassembling the fan motor, align the end of the connector with the height of ★ for play.
1 Remove the fan rotor. The bearing is on the left side.		
2 Loosen the two screws and remove the mounting plate for the bearing.		
3 The bearing is made of rubber. Push it inwards firmly and remove it.		

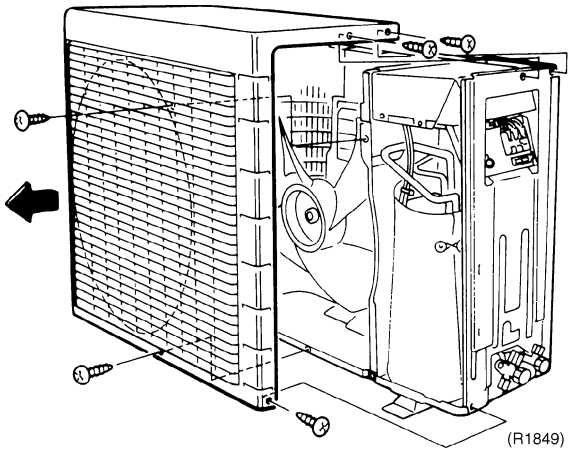
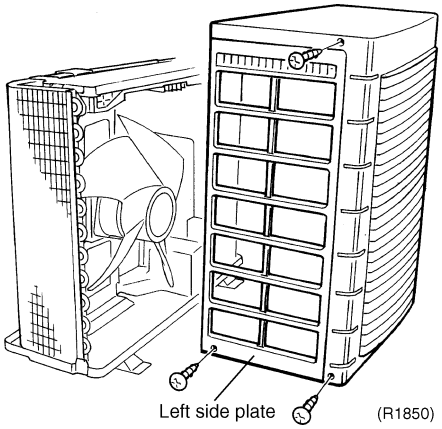
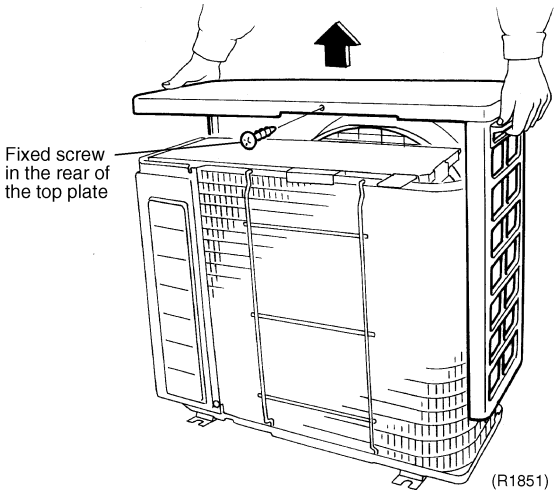
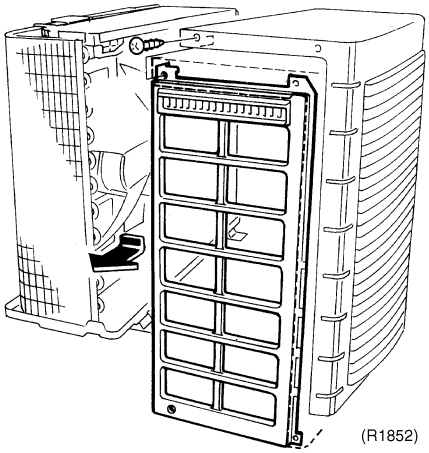
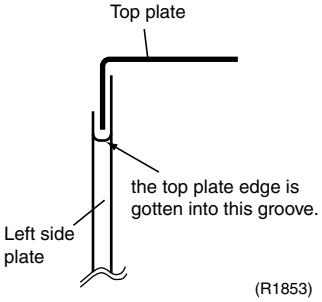
3. R25/35CV1A, RY25/35CVMA

3.1 Removal of Panels

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

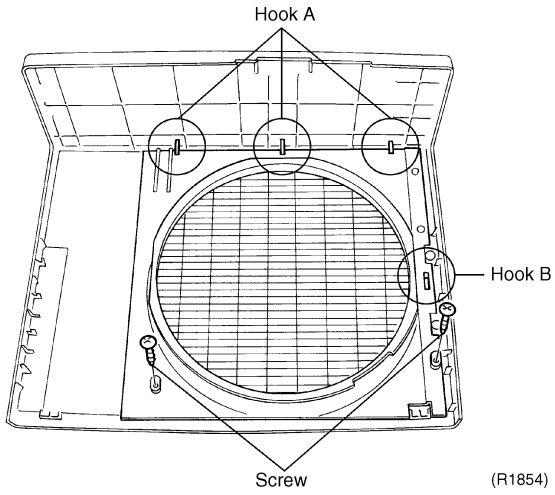
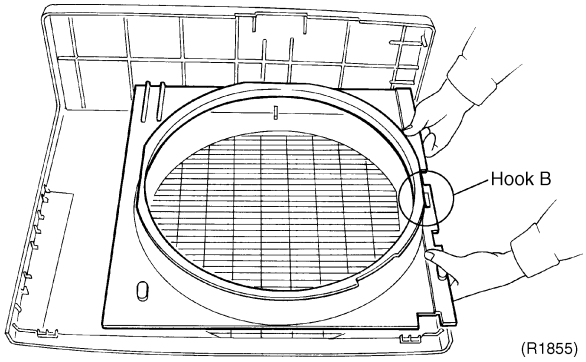
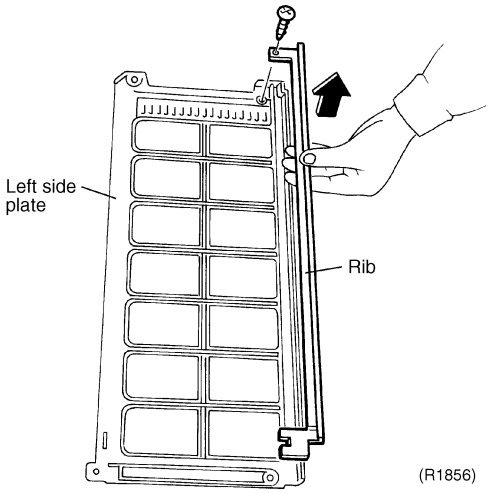
Step	Procedure		Points
1	The stop valve cover can be removed when the fixed screw is removed.	 (R1847)  (R1848)	■ As three hooks are provided (at three portions), slide the cover downward to remove. ■ The forced cooling operation in the pumping down mode can be carried out by pushing the operation switch on the main unit for five seconds. (The existing models can do it through the switch on the PC board just as well.) ■ The layout of the connection ports for the flares has been changed to horizontal position from vertical position.

Step	Procedure	Points
2	The top plate and the front plate are constructed in a monoblock. Remove the three screws at the right side and the two screws at the front plate.	 (R1849)
3	Remove the three screws at the left side.	 Left side plate (R1850)
4	Remove the one fixed screw in the rear of the top plate. Once lift the top plate and then remove it forward.	 Fixed screw in the rear of the top plate (R1851)	■ The left side plate and the bellmouth can be removed all at once. ■ When restoring the top plate, move it horizontally and get it down for the easy work.
5	The front plate and the left side plate can be removed when the one fixed screw is removed.	 (R1852)	■ Sectional view at the front.  Top plate; the top plate edge is gotten into this groove.; Left side plate; (R1853)

3.2 Removal of Bellmouth and Left Side Plate

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

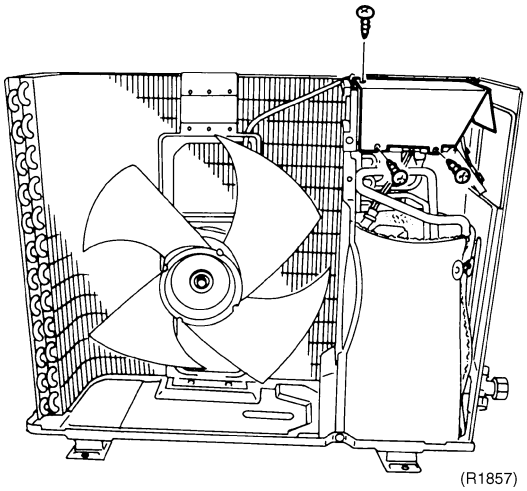
Step	Procedure		Points
1	The bellmouth is attached with two screws and four hooks.		■ Remove the bellmouth, beginning the front plate after removing the two screws which are set below.
2	Remove the two screws and pull the bellmouth forward to remove, as the four hooks are provided.		■ Slide the bellmouth in the arrow direction to disengage the hook B.
3	The rib is equipped on the left side plate and it can be disengaged when the one fixed screw is removed.		

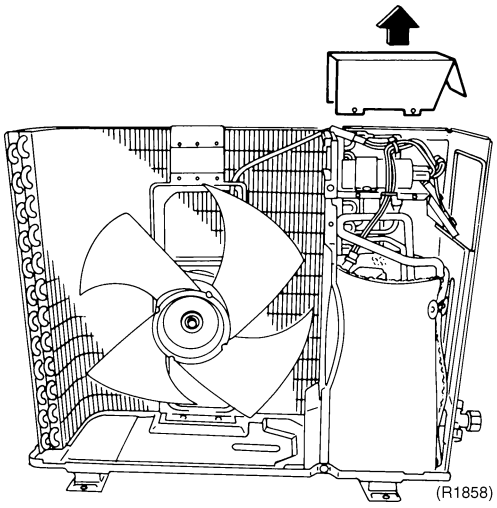
3.3 Removal of Electrical Device Mounting Plate

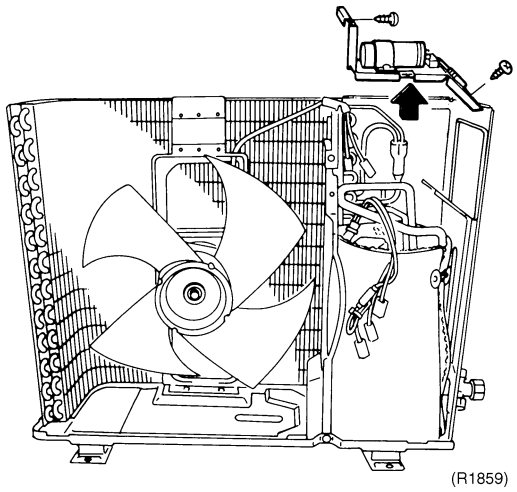
Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. To remove the shelter.		
1	Remove the three fixed screws for removing the shelter.	
2	Remove the shelter.	
2. To remove the switch box.		
1	Remove all the harness.	
2	Remove two fixing screws of electrical device mounting plate.	
3	Remove the electrical device mounting plate.	


(R1857)

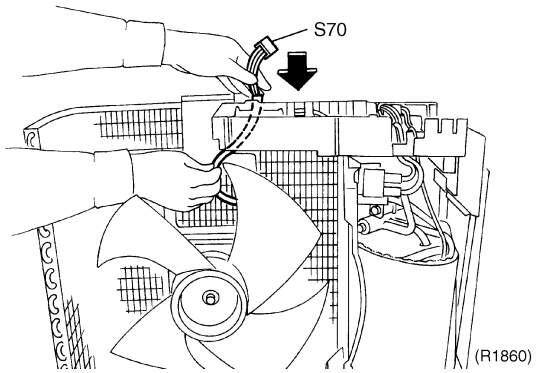
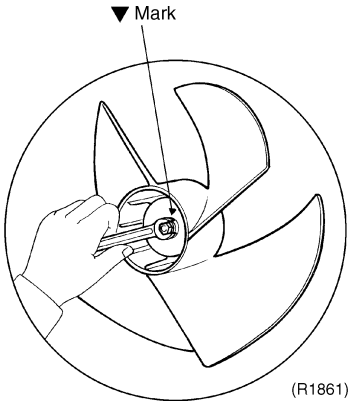
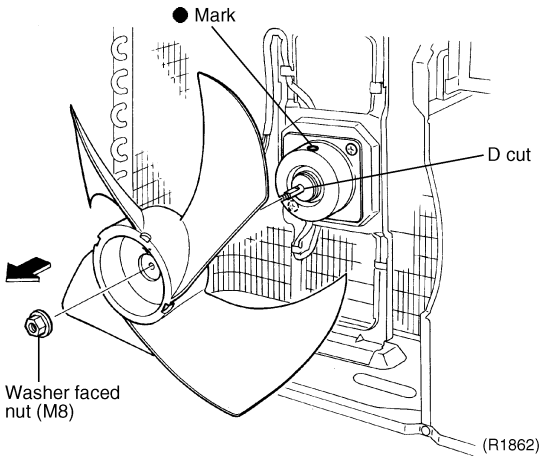
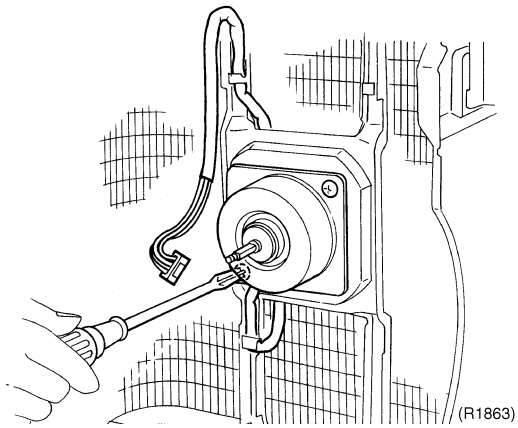
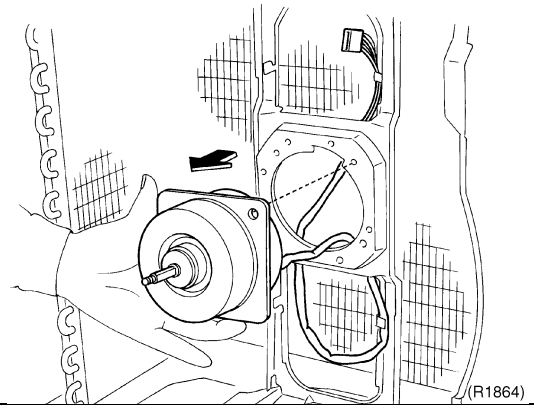

(R1858)


(R1859)

3.4 Removal of Propeller Fan and Fan Motor

Procedure

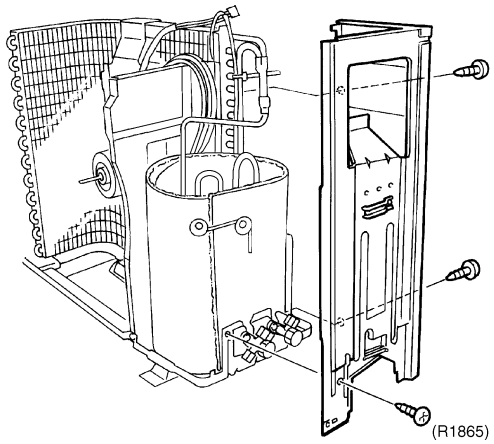
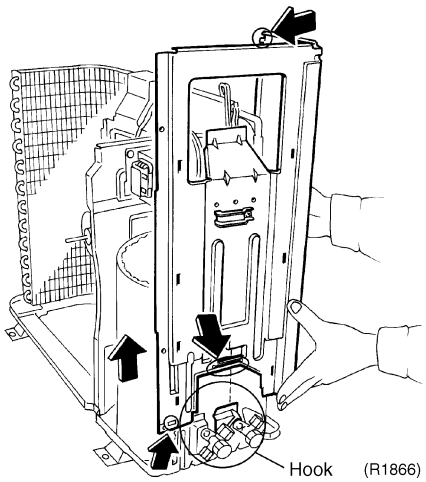
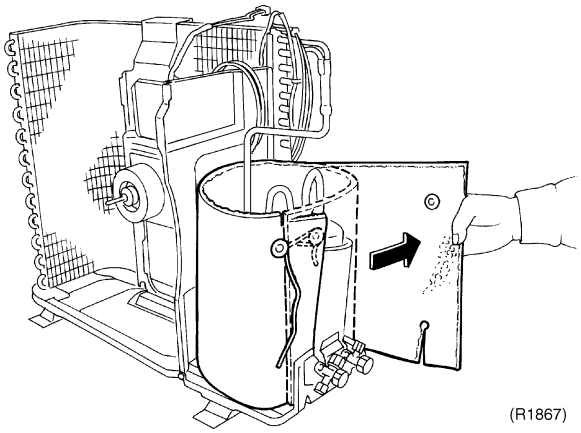
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

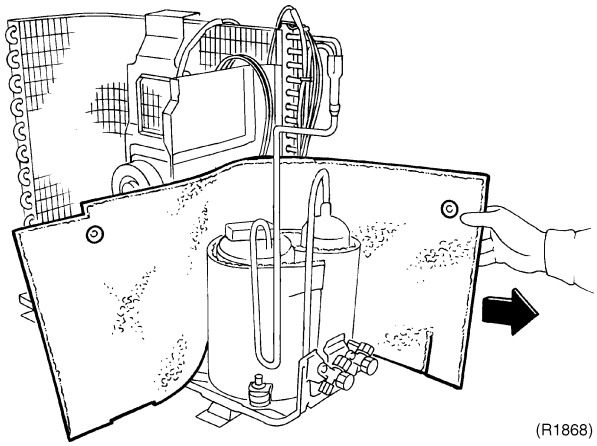
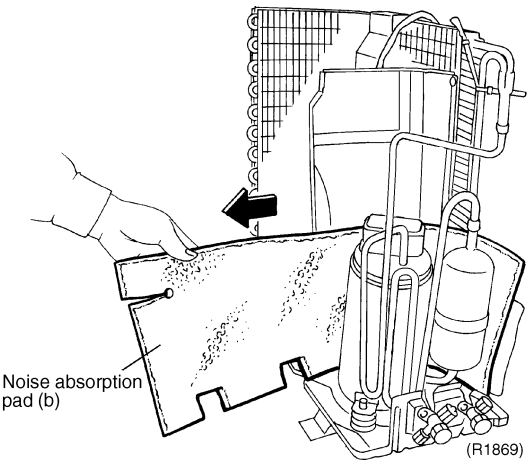
Step	Procedure	Points
■ Disconnect the fan motor connector S70.		■ Remove the external plates and the drip proof cover protecting the electric parts. ■ Be sure to avoid forgetting to restore the shelter and to avoid losing or damaging it.
1 The lead-wires of the fan motor can be disengaged by passing through the clearance between the heat exchanger and the switch box.		
2 The propeller fan can be removed when the washer faced nut (M8) is removed.		■ When restoring, match the ▼ mark of the propeller fan with the D-cut of the motor shaft. ■ The fan should be restored so that the mark ● will be at upper part of the fan motor.
3 Remove two screws for removing the fan motor. The lead wires are disengaged by raising the hooks which fix the lead wires.		
4 Remove the fan motor.		

3.5 Removal of Compressor Noise Absorption Pad

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. To remove the right side plate.	 (R1865)	
1 Remove the three screws for removing the right side plate.		
2 Lift the right side plate to disengage the hooks.	 Hook (R1866)	■ Insert the three hooks for the restoration.
2. To remove the noise absorber	 (R1867)	■ Since the slit prepared for the piping connection on the noise absorption pad is torn easily, remove the pad carefully. ■ When restoring, the noise absorption pad should pass the internal side of the piping.
1 Untie the string fixing the body of the compressor noise absorption pad.		

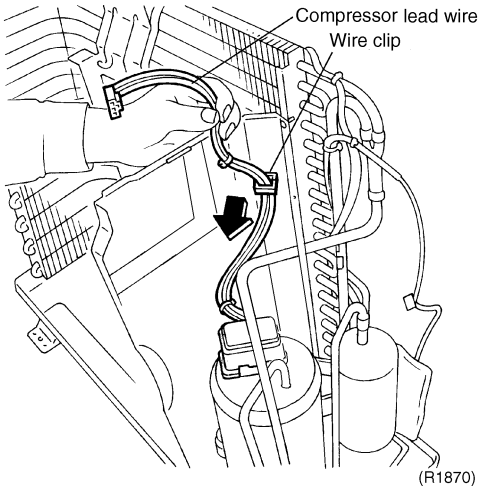
Step	Procedure		Points
2	Pull out the body of the noise absorption pad.	 (R1868)	■ Since the slit prepared for the piping on the noise absorption pad is torn easily, remove the pad carefully. ■ When restoring, the noise absorption pad should pass the internal side of the piping.
3	Pull out the body of the noise absorption pad (b).	 (R1869)	

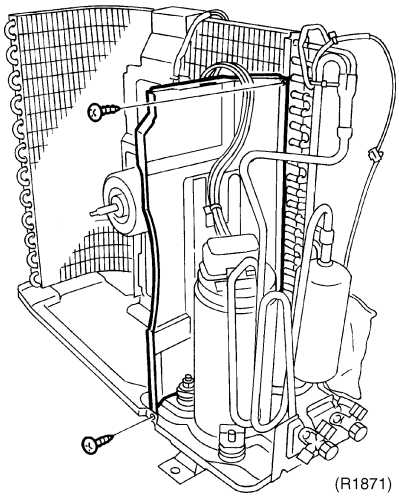
3.6 Removal of Partition Plate

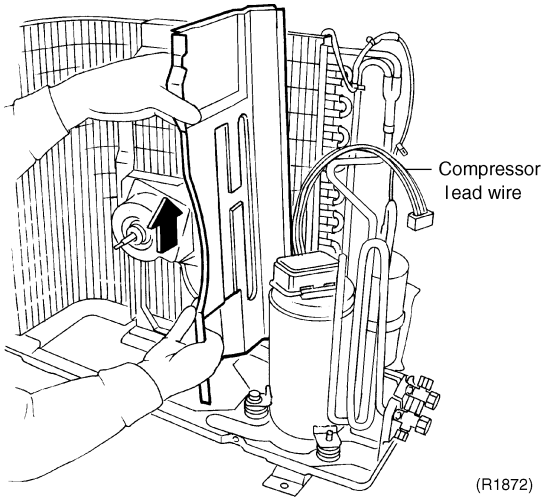
Procedure

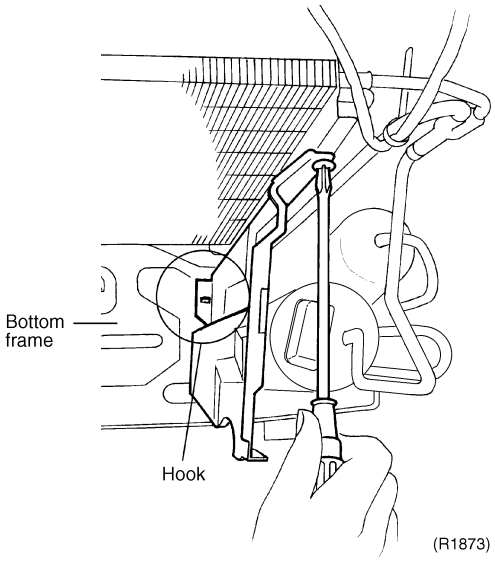
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. To remove the partition plate.		
1	Disengage the lead wires from the wire clip.	
2	Remove the two screws fixing the partition plate.	
3	Pull the partition plate upward to remove.	







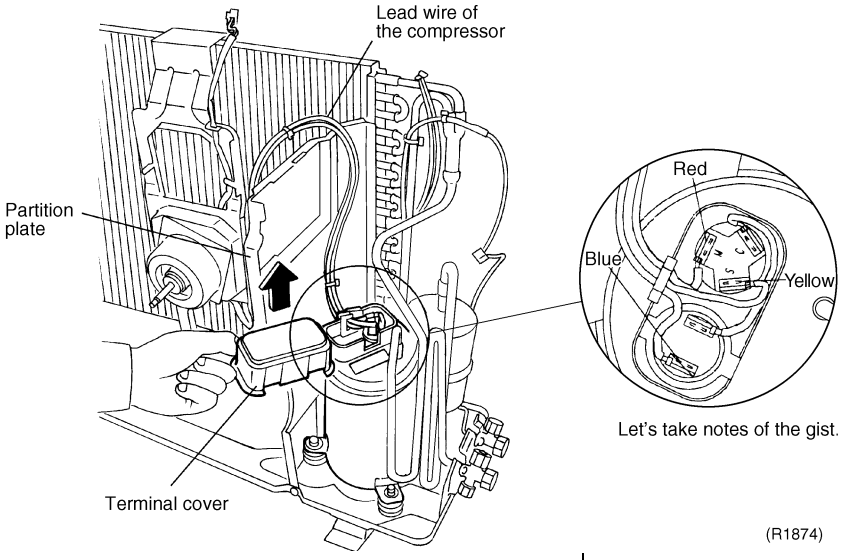
Step	Procedure		Points
4	When restoring the partition plate, put the hook into the bottom frame.		

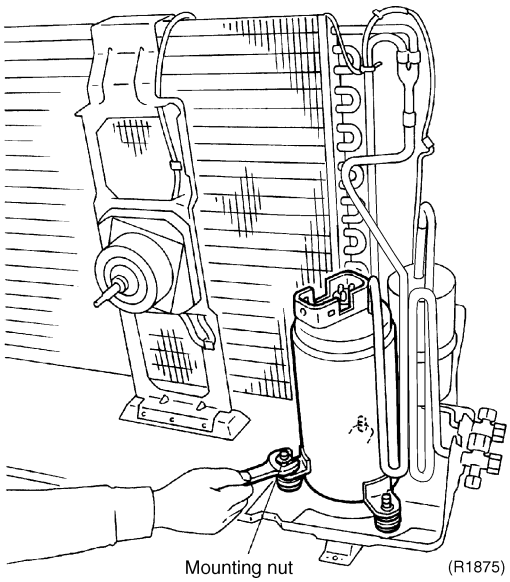
3.7 Removal of Compressor

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

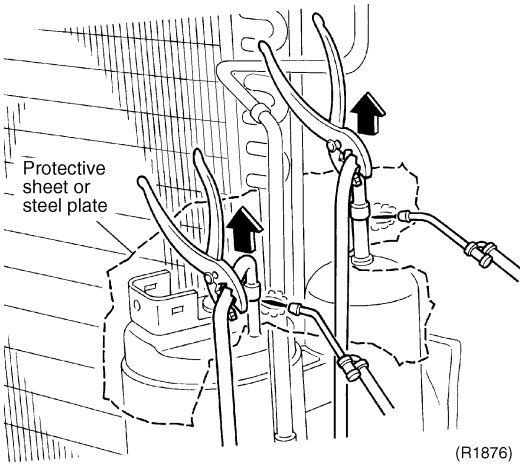
Step	Procedure	Points
1. To remove the parts around the compressor.		■ Be careful so as not to burn the compressor terminals or the name plate.
1	Remove the terminal cover, the lead wires of the compressor and the partition plate so as not to be burnt out by a gas brazing machine.	
2	The compressor's mounting nut to be removed is one piece.	
3	Remove the nut by means of an open-end wrench.	
■ Begin your work after recognizing complete empty of refrigerant in the refrigerant circuit.		
■ Be sure to apply nitrogen's permutation when heating up the brazing part.		
1	Remove the brazing part on the compressor discharge side.	
2	Heat up the brazing part on the compressor suction part and then remove it.	
3	Lift the compressor and remove it.	





Warning
Since it may happen that refrigeration oil in the compressor will catch fire, prepare wet cloth so as to extinguish fire quickly.

Warning!
Ventilate when refrigerant leaks during the work.(If refrigerant contacts fire, it will cause to arise toxic gas).



Caution
Be careful about pipes and so on, which were heated up by a gas brazing machine, so as not to get burnt on your hands.

■ Pay attention so that the heat exchanger's fins will not be burnt.

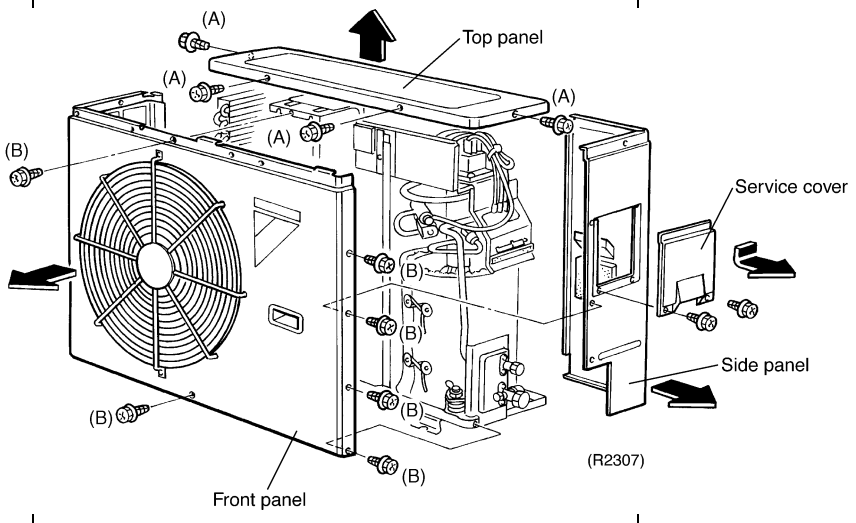
4. R50/60CV1A

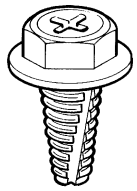
4.1 Removal of Panels

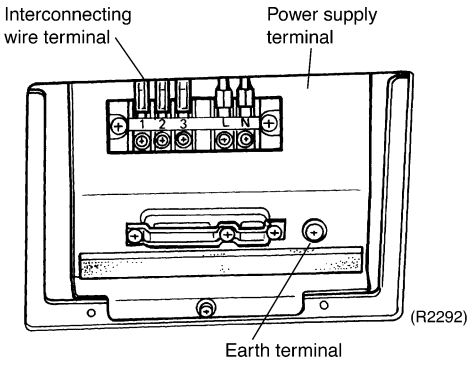
Procedure

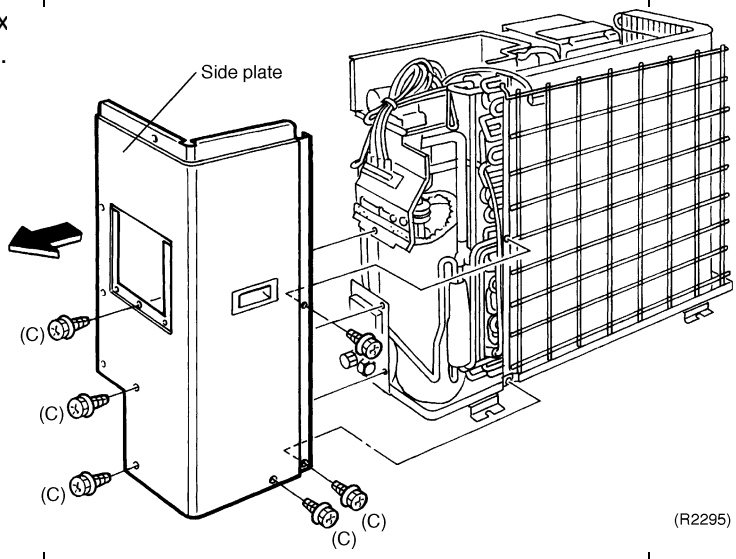
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1	To dismount the top panel, remove the four mounting screws (A).	
2	To dismount the front panel, remove the six mounting screws (B).	
3	To dismount the service cover, remove the two mounting screws.	
4	To dismount the side panel, remove the six mounting screws (C).	







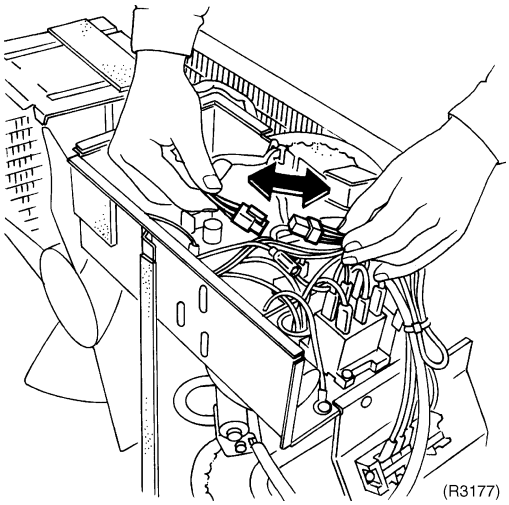


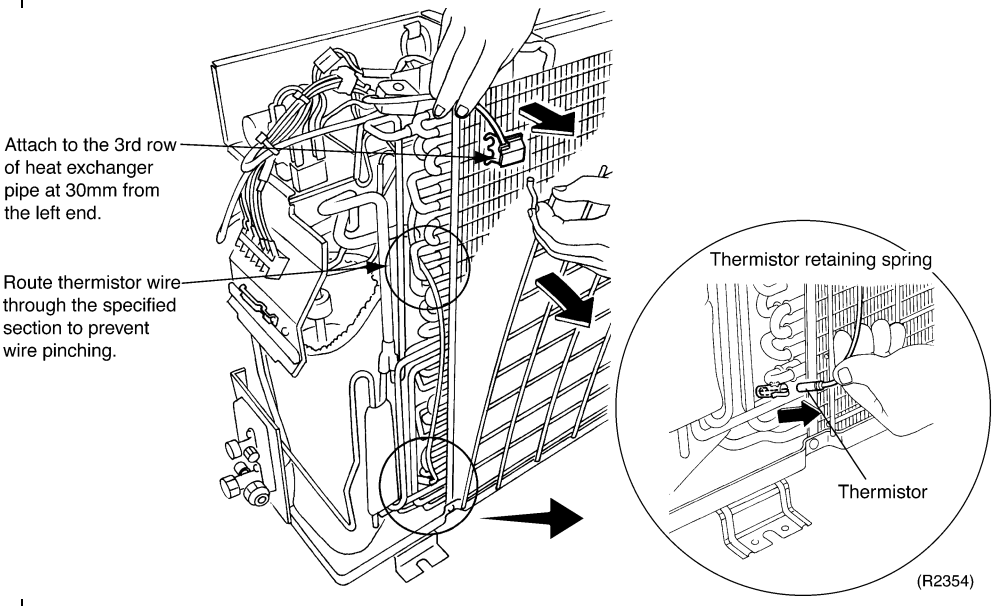
4.2 Removal of Electrical Parts Box

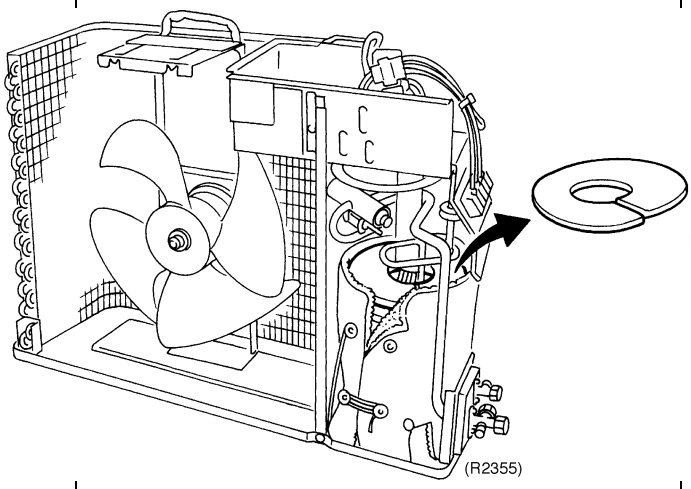
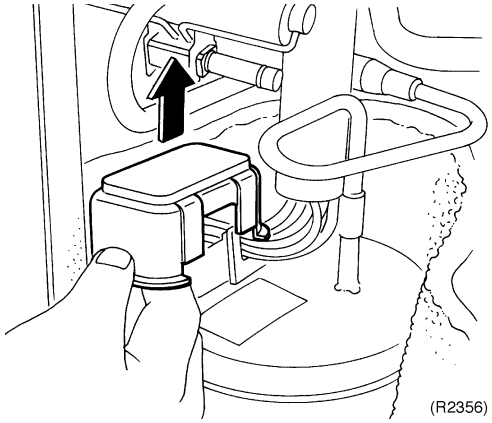
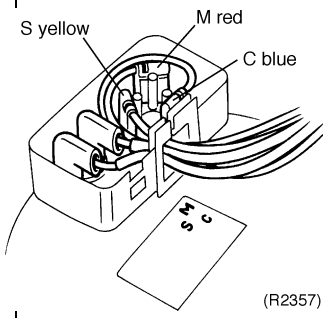
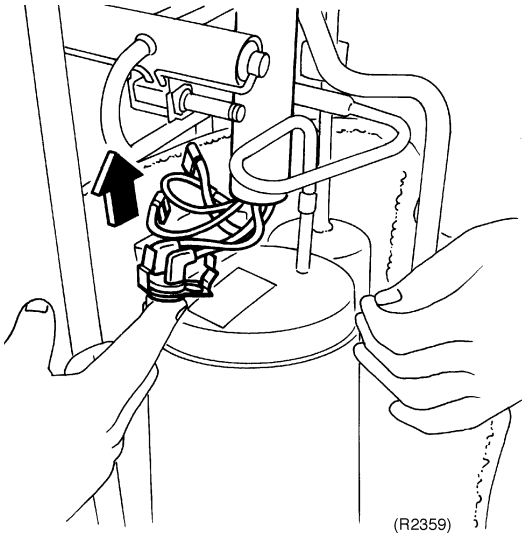
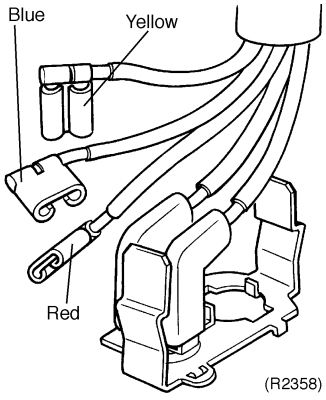
Procedure

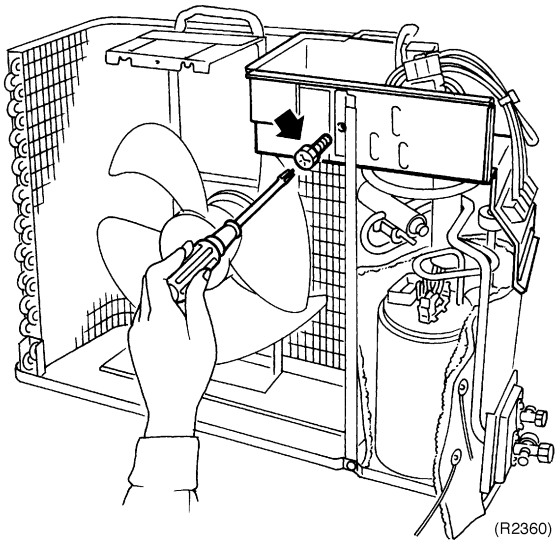
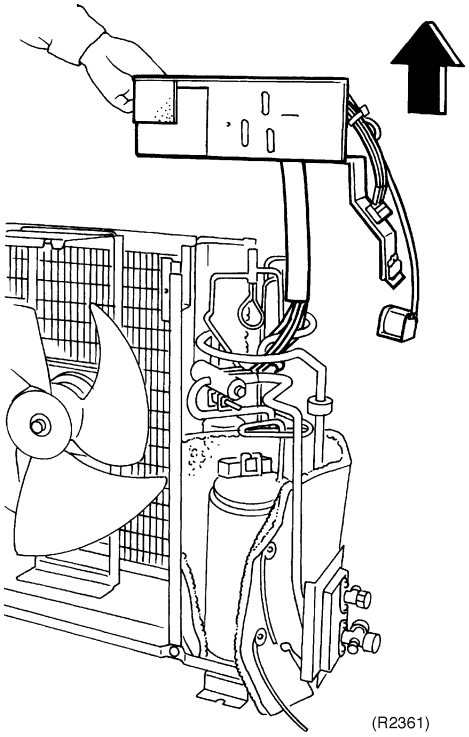
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1	Remove the wire harness connectors from the PCB.	
2	Dismount the outdoor air thermistor and the heat exchanger thermistor.	




Attach to the 3rd row of heat exchanger pipe at 30mm from the left end.
Route thermistor wire through the specified section to prevent wire pinching.
Thermistor retaining spring
Thermistor
(R2354)

Step	Procedure	Points
3	Remove top insulation material from compressor.  (R2355)	■ Terminal code is printed. Do not scorch the indication with the flame of welder. Also record terminal code on a memo paper in case the indication becomes illegible.
4	Remove terminal cover.  (R2356)	 (R2357)
5	Remove compressor protective device and three terminals together with mounting plate.  (R2359)	 (R2358) ■ Connect lead wires to proper fasten terminals. S ·····Yellow M·····Red C ·····Blue

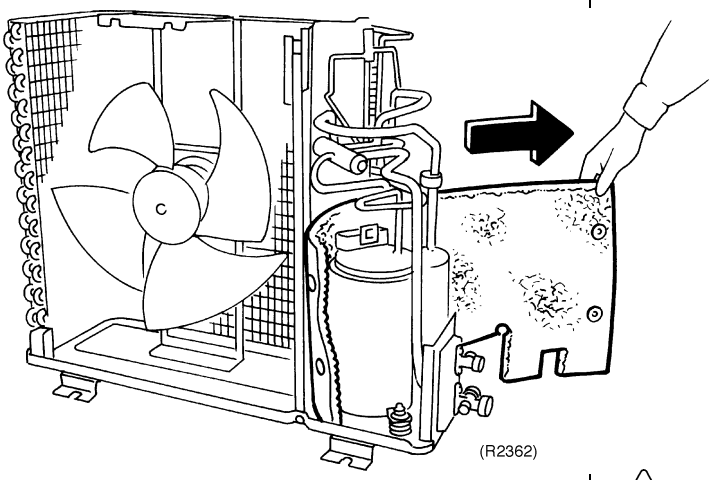
Step	Procedure		Points
6	Remove the screw.	 (R2360)	
7	Take off the electrical parts box.	 (R2361)	

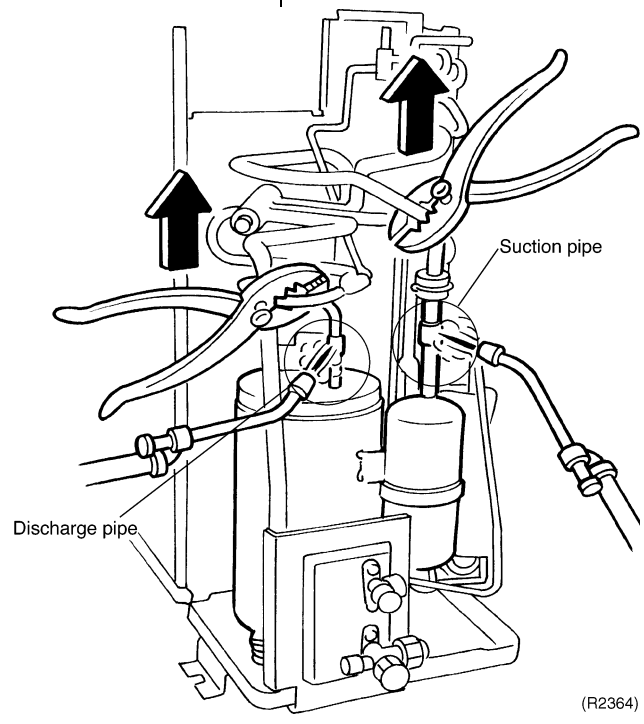
4.3 Removal of Compressor

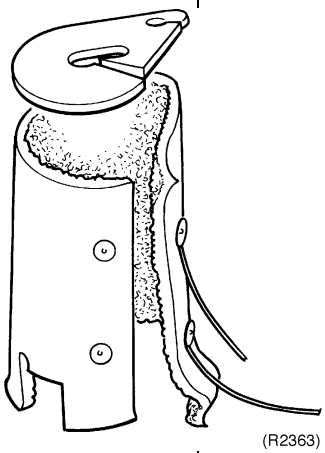
Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

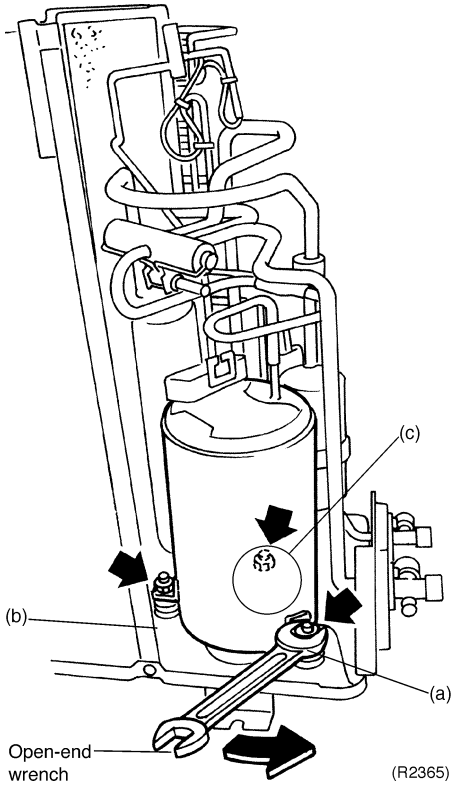
Step	Procedure	Points
■ Make sure that there is no refrigerant in the unit before disassembling.		
1	Pull out sound insulation material (side insulation) from right side.	
2	Disconnect suction pipe and discharge pipe of compressor at brazed sections.	**WARNING** **If refrigerant gas leaks during servicing work, ventilate the area. (If refrigerant gas contacts flames, hazardous gas can generate.)** ■ When removing sound-insulation material, do not pull it with excessive force, since it is inserted between pipes.

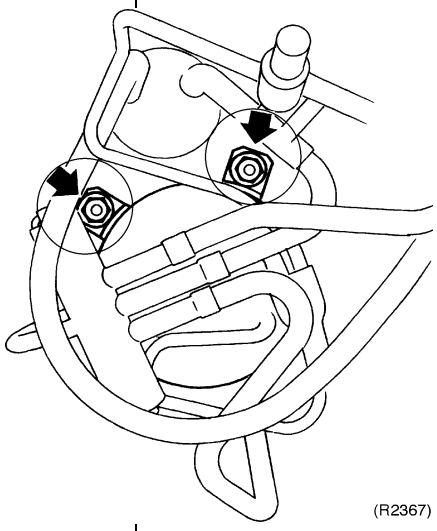


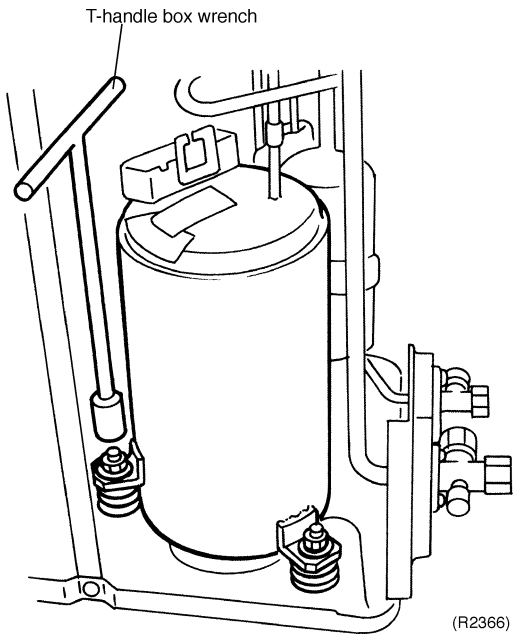




Step	Procedure	Points
3	After disconnecting refrigerant pipes, remove three washer nuts that secure compressor in place. Use open-end wrench to remove washer nut (a) located on right front side.	
4	Use T-handle box wrench to loosen nuts (b) and (c).	







Part 8
Others

1. Others 182
1.1 Test Run from the Remote Controller 182
1.2 Jumper Settings 184

1. Others

1.1 Test Run from the Remote Controller

ARC423 Series

FT25/35CV1A

Select the lowest programmable temperature.

- Trial operation in cooling mode may be disabled depending on the room temperature. Use the remote control for trial operation as described below.
- After trial operation is complete, set the temperature to a normal level (26°C to 28°C).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

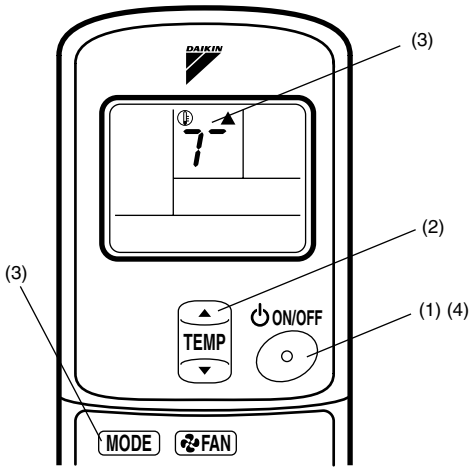
Trial Operation and Testing

1. Measure the supply voltage and make sure that it falls in the specified range.
2. Trial operation should be carried out in either cooling or heating mode.
3. Carry out the test operation in accordance with the Operation Manual to ensure that all functions and parts, such as louver movement, are working properly.

- The air conditioner requires a small amount of power in its standby mode. If the system is not to be used for some time after installation, shut off the circuit breaker to eliminate unnecessary power consumption.
- If the circuit breaker trips to shut off the power to the air conditioner, the system will restore the original operation mode when the circuit breaker is opened again.

Trial operation from Remote Controller

(1) Press ON/OFF button to turn on the system.
(2) Simultaneously press center of TEMP button and MODE buttons.
(3) Press MODE button twice.
("*T*" will appear on the display to indicate that Trial Operation mode is selected.)
(4) Trial run mode terminates in approx. 15 minutes and switches into normal mode. To quit a trial operation, press ON/OFF button.



(R4006)

ARC433 series

FT50/60CV1A, FTY25/35CVMA

Select the lowest programmable temperature.

- Trial operation in cooling mode may be disabled depending on the room temperature. Use the remote control for trial operation as described below.
- After trial operation is complete, set the temperature to a normal level (26°C to 28°C).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

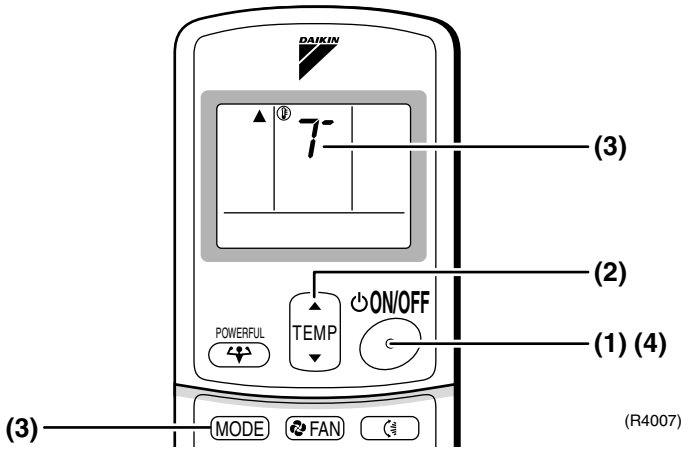
Trial Operation and Testing

1. Measure the supply voltage and make sure that it falls in the specified range.
2. Trial operation should be carried out in either cooling or heating mode.
3. Carry out the test operation in accordance with the Operation Manual to ensure that all functions and parts, such as louver movement, are working properly.

- The air conditioner requires a small amount of power in its standby mode. If the system is not to be used for some time after installation, shut off the circuit breaker to eliminate unnecessary power consumption.
- If the circuit breaker trips to shut off the power to the air conditioner, the system will restore the original operation mode when the circuit breaker is opened again.

Trial operation from Remote Controller

(1) Press ON/OFF button to turn on the system.
(2) Simultaneously press center of TEMP button and MODE buttons.
(3) Press MODE button twice.
("*T*" will appear on the display to indicate that Trial Operation mode is selected.)
(4) Trial run mode terminates in approx. 15 minutes and switches into normal mode. To quit a trial operation, press ON/OFF button.



1.2 Jumper Settings

1.2.1 When Two Units are Installed in One Room

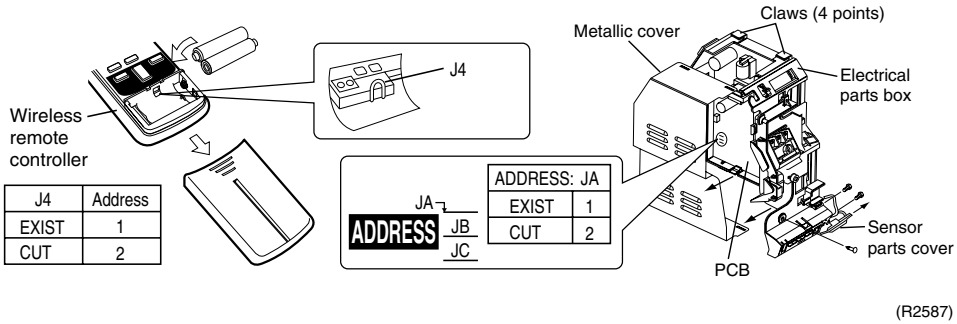
- **How to set the different addresses.**
- When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

PCB in the indoor unit

- Remove the front panel.
- Remove the sensor parts cover (2-screws), then remove the electrical parts box (1-screw).
- Slide the metallic cover to remove it. (4-claws on the electrical parts box.)
- Cut the jumper JA on PCB.

Wireless remote controller (in case of wall mounted type)

- Cut the jumper J4.



1.2.2 Jumper Setting

Jumper (On indoor control PCB)	Function	When connected (factory set)	When cut
JC	Power failure recovery function	Auto re-start	Unit does not resume operation after recovering from a power failure. Timer ON-OFF settings are cleared.
JB	Fan speed setting when compressor is OFF on thermostat.	Fan speed setting ; Remote controller setting	Fan rpm is set to “0” <Fan stop>

Part 9
Appendix

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   1.2 Outdoor Units.....187
2. Wiring Diagrams.....190
   2.1 Indoor Units.....190
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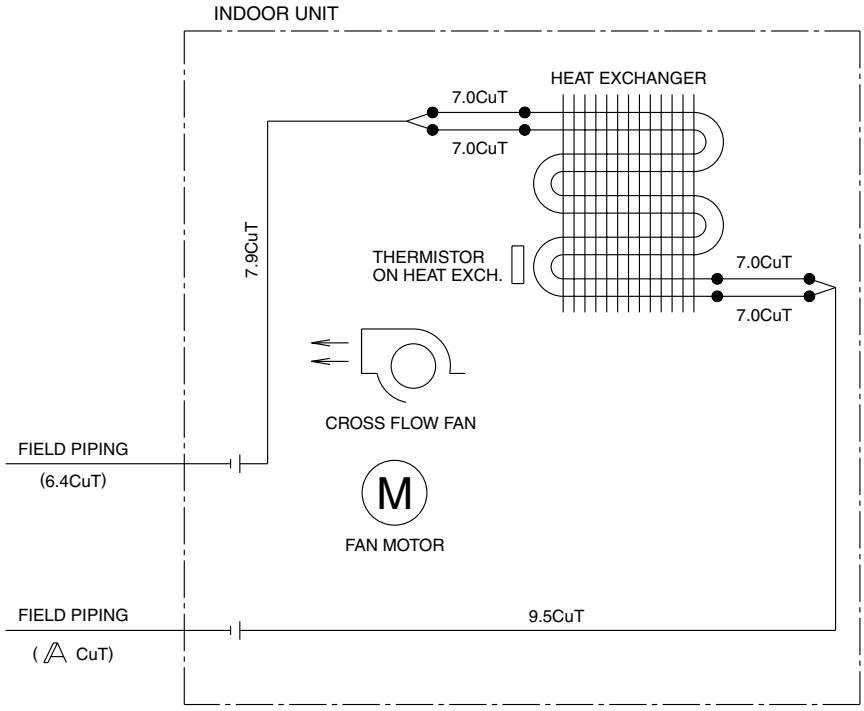
1. Piping Diagrams

1.1 Indoor Units

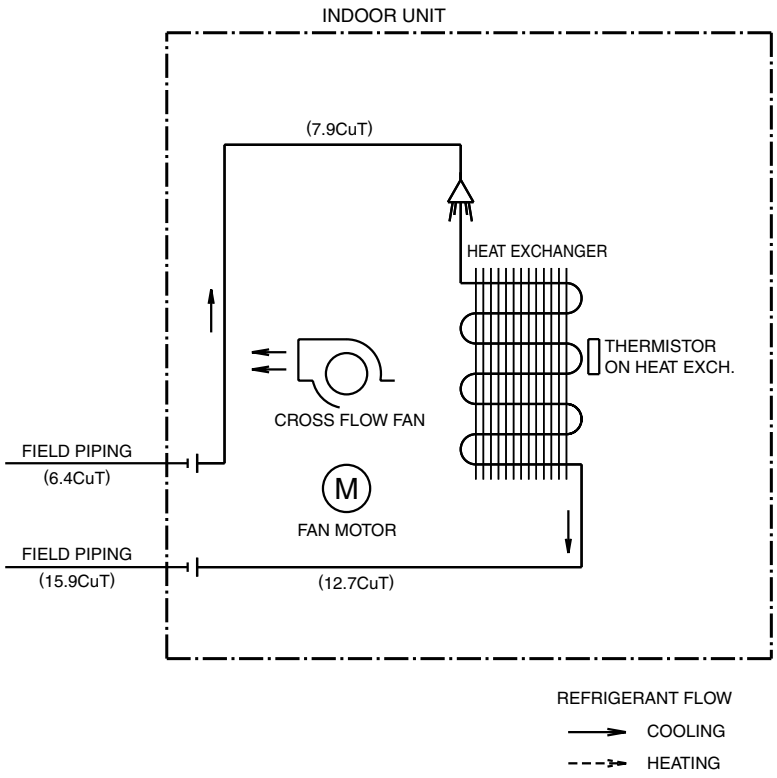
FT25CV1A / FT35CV1A



	A
FT25-	9.5
FT35-	12.7

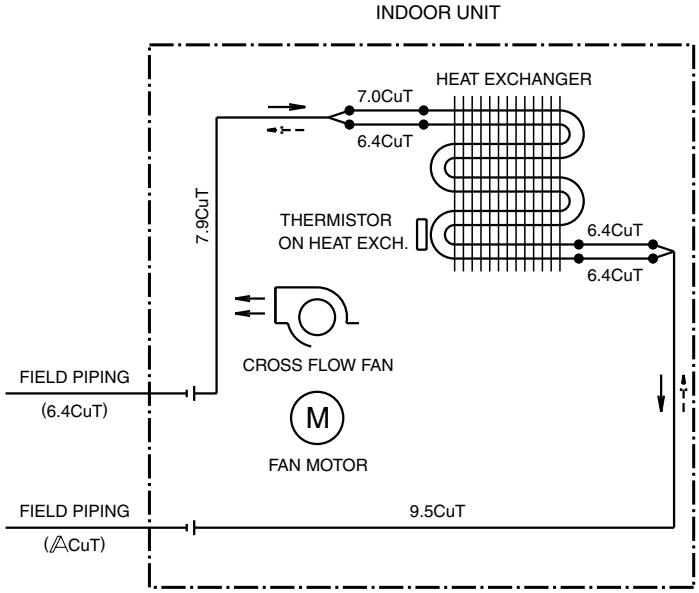
C:4D023507H

FT50CV1A / FT60CV1A



C : 4D040082D

FTY25CVMA / FTY35CVMA

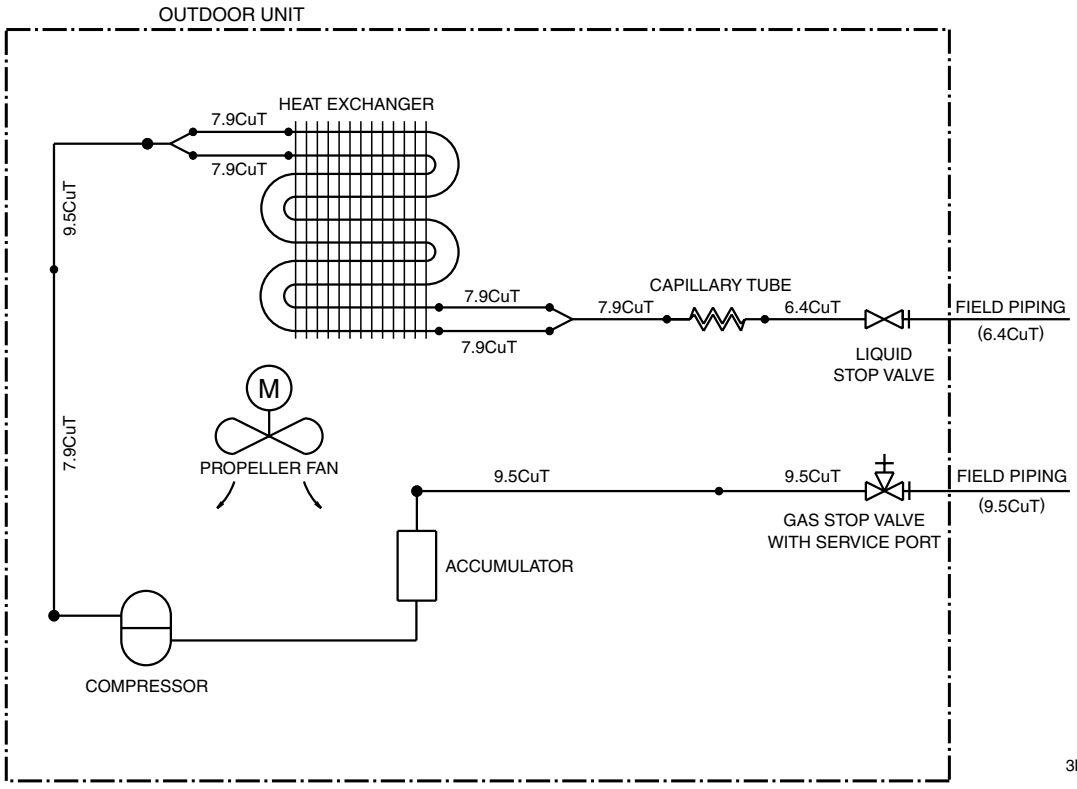


	Δ
FTY25--	9.5
FTY35--	12.7

4D045923

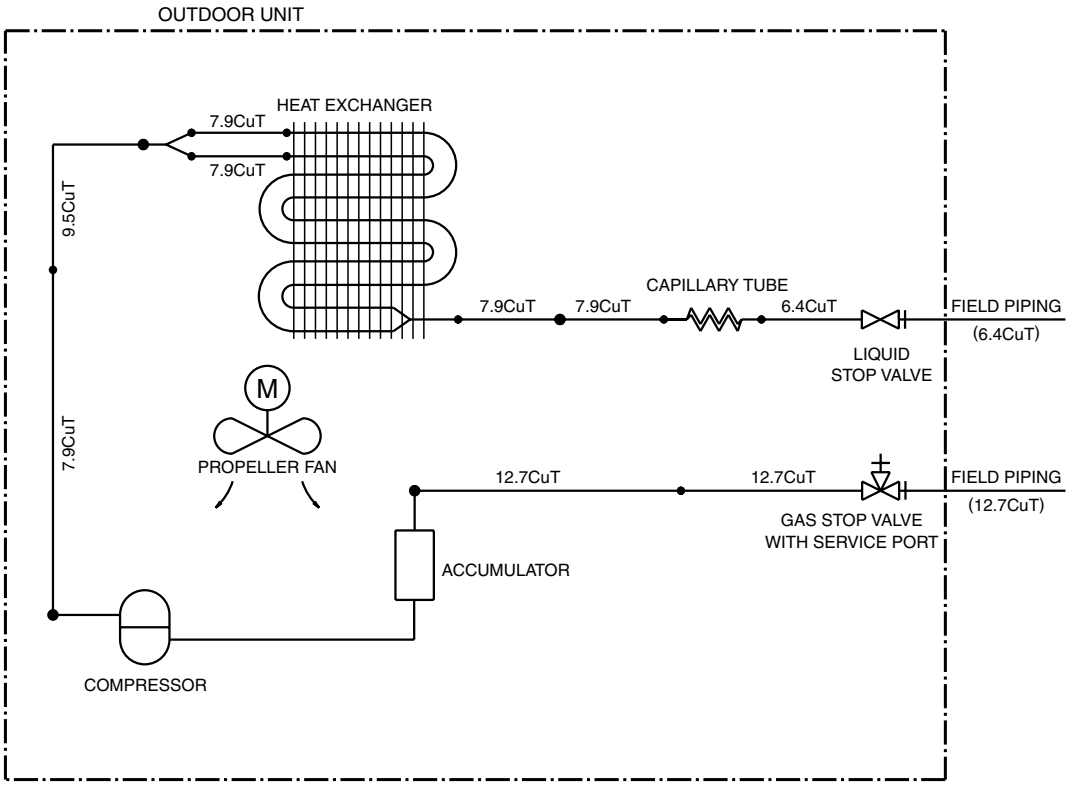
1.2 Outdoor Units

R25CV1A

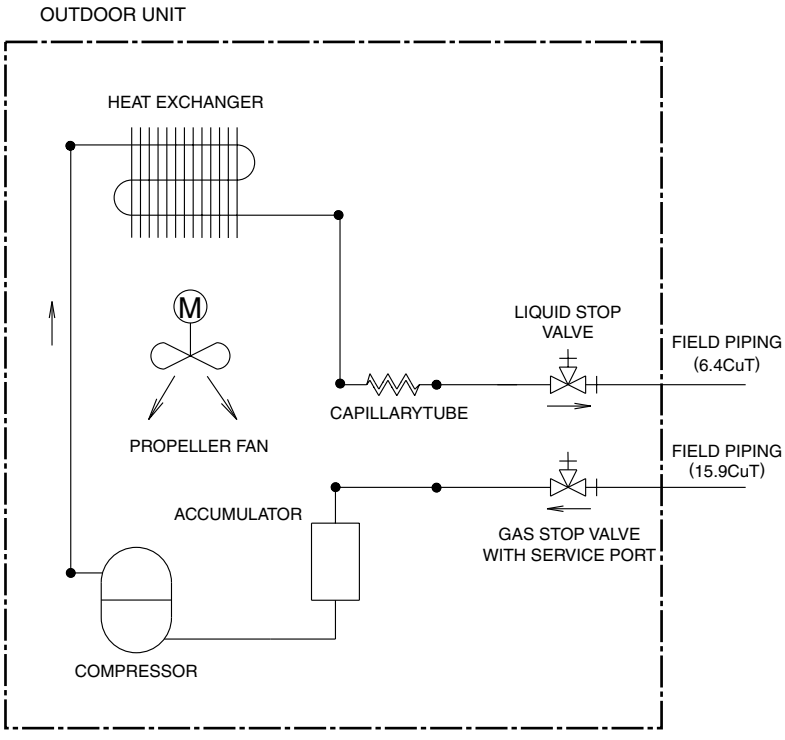


3D020878D

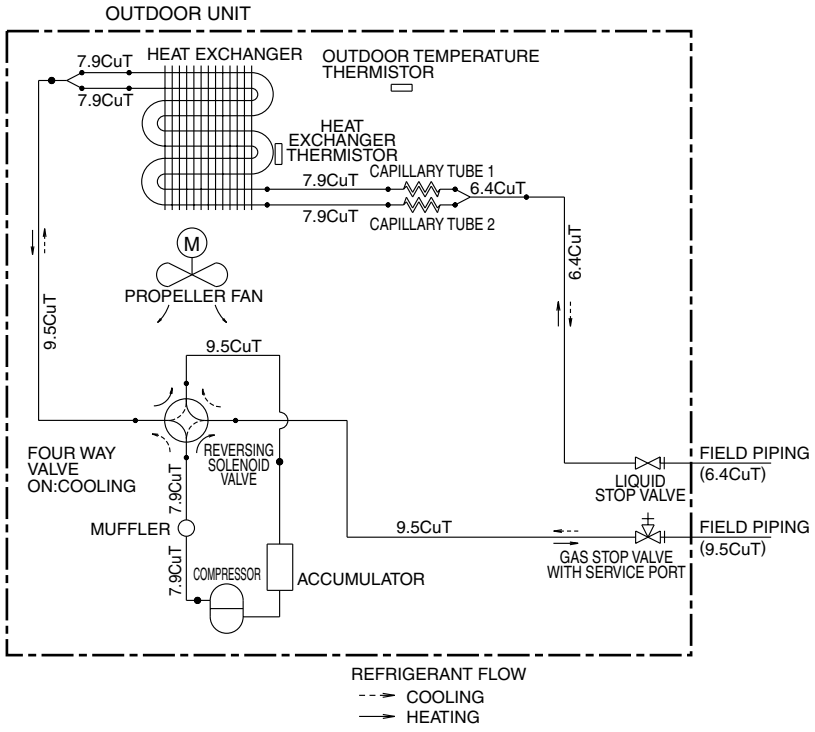
R35CV1A



R50CV1A / R60CV1A

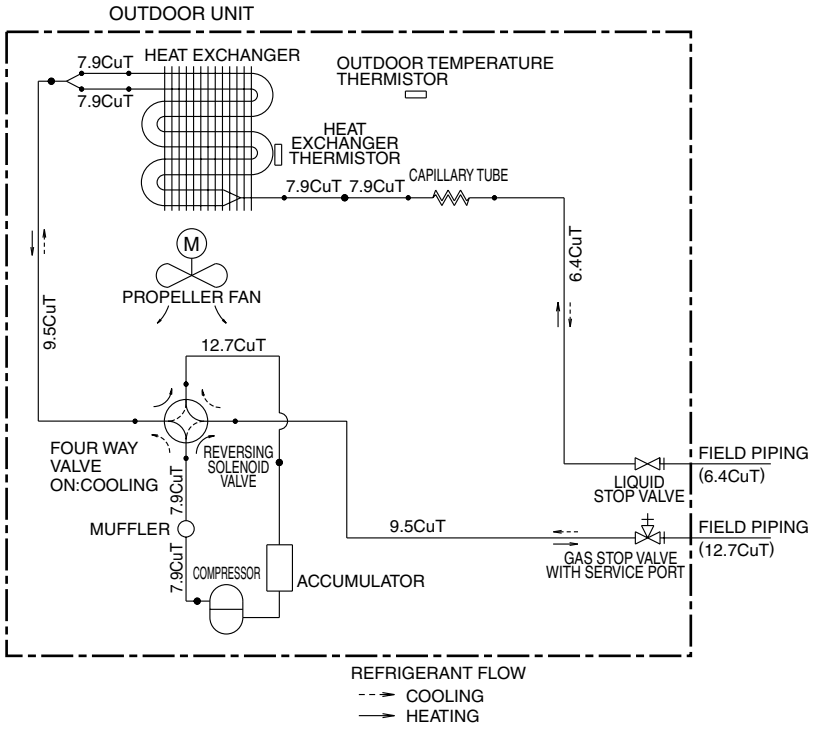


RY25CVMA



3D019959F

RY35CVMA

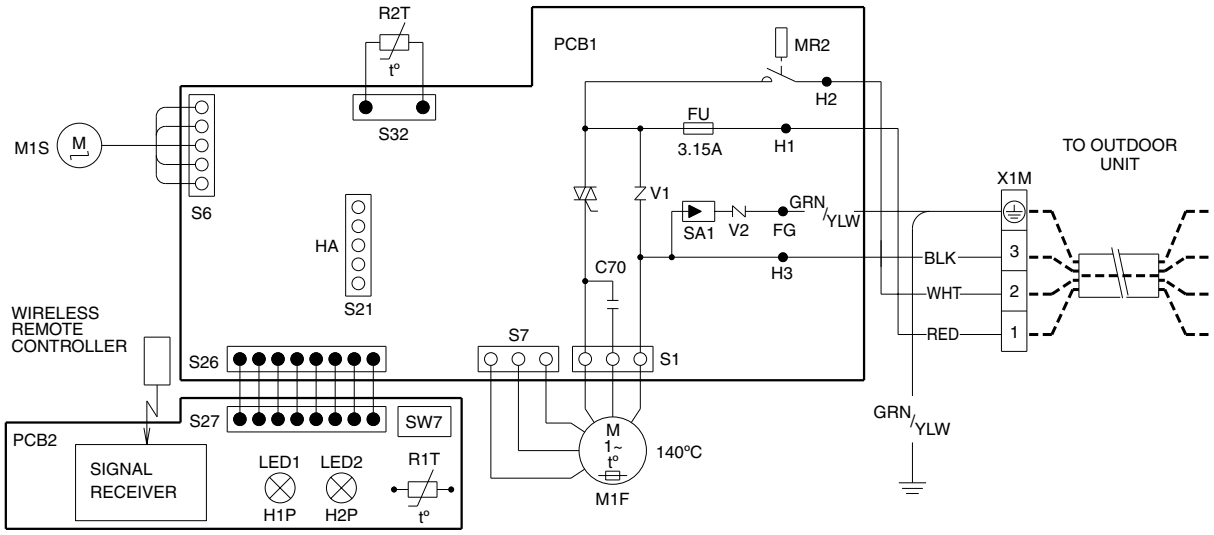


3D019957E

2. Wiring Diagrams

2.1 Indoor Units

FT25CV1A / FT35CV1A

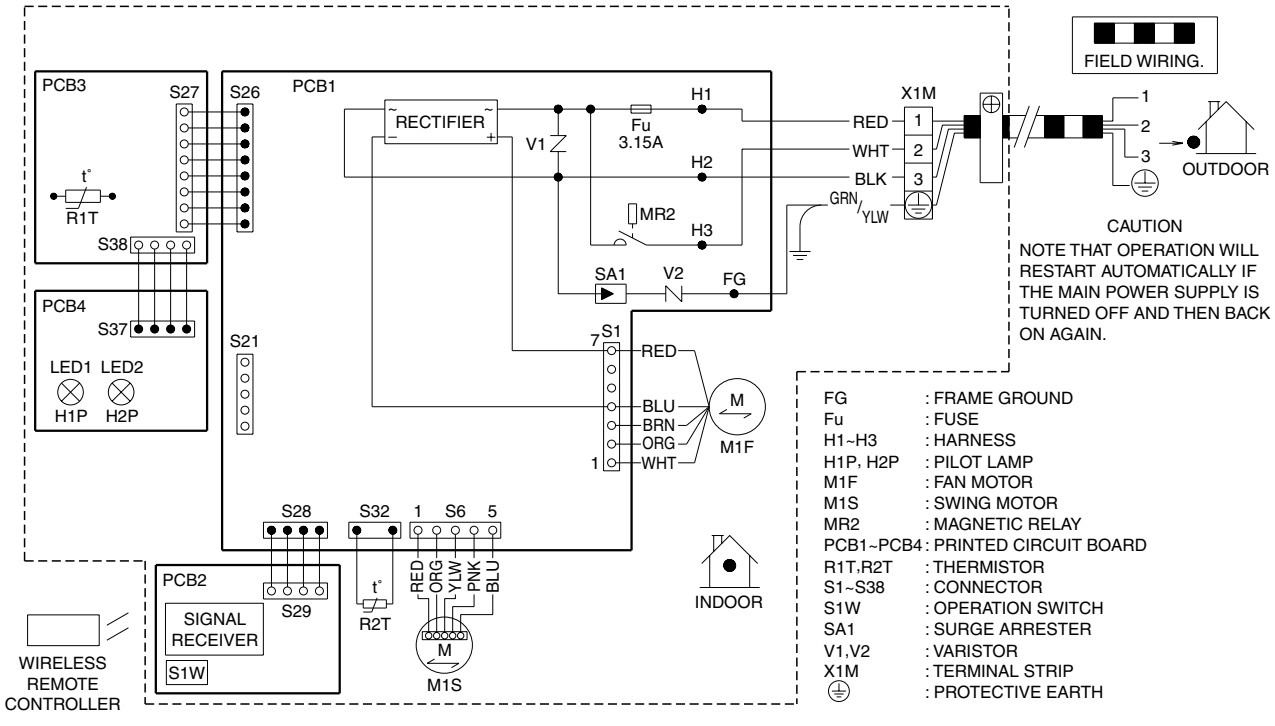


C70	: RUNNING CAPACITOR	R1T,R2T	: THERMISTOR
FU	: FUSE	S1~S32	: CONNECTOR
H1P,H2P	: PILOT LAMP	SW7	: OPERATION SWITCH
M1F	: FAN MOTOR	SA1	: SURGE ARRESTER
M1S	: SWING MOTOR	V1,V2	: VARISTOR
MR2	: MAGNETIC RELAY	X1M	: TERMINAL STRIP
PCB1,PCB2	: PRINTED CIRCUIT BOARD	⏚	: PROTECTIVE EARTH

NOTE
ADDRESS JUMPER IS MARKED "JA"ON PCB1.

3D027406C

FT50CV1A / FT60CV1A

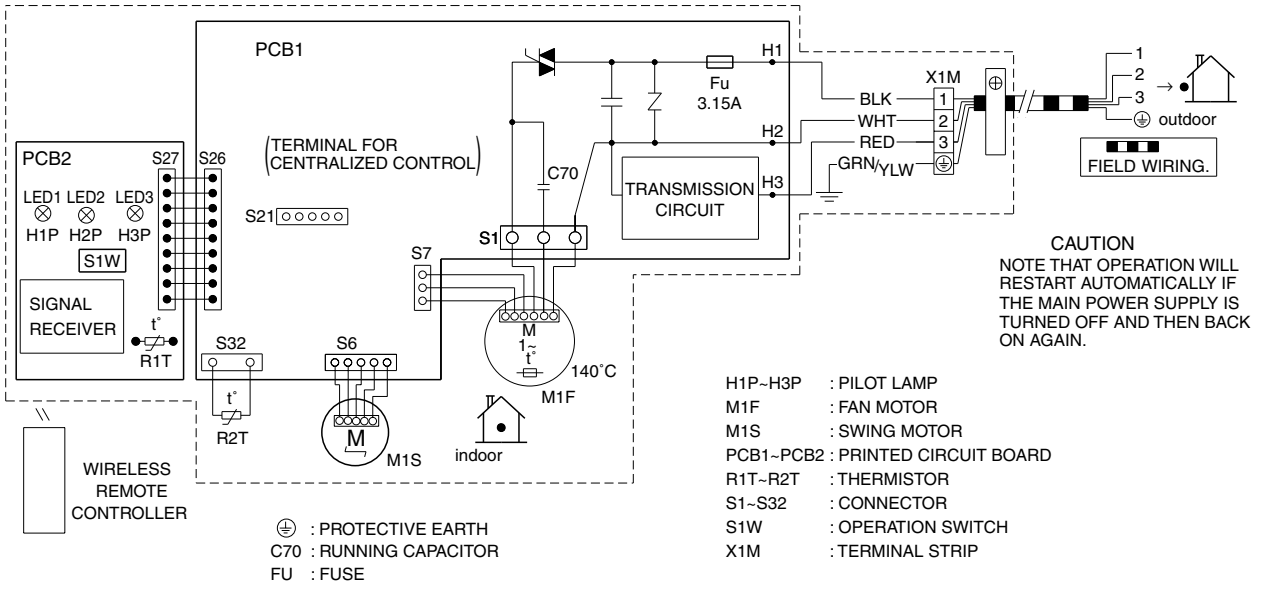


CAUTION
NOTE THAT OPERATION WILL RESTART AUTOMATICALLY IF THE MAIN POWER SUPPLY IS TURNED OFF AND THEN BACK ON AGAIN.

FG	: FRAME GROUND	R1T,R2T	: THERMISTOR
Fu	: FUSE	S1~S38	: CONNECTOR
H1~H3	: HARNESS	S1W	: OPERATION SWITCH
H1P, H2P	: PILOT LAMP	SA1	: SURGE ARRESTER
M1F	: FAN MOTOR	V1,V2	: VARISTOR
M1S	: SWING MOTOR	X1M	: TERMINAL STRIP
MR2	: MAGNETIC RELAY	⏚	: PROTECTIVE EARTH
PCB1~PCB4	: PRINTED CIRCUIT BOARD		

3D038655C

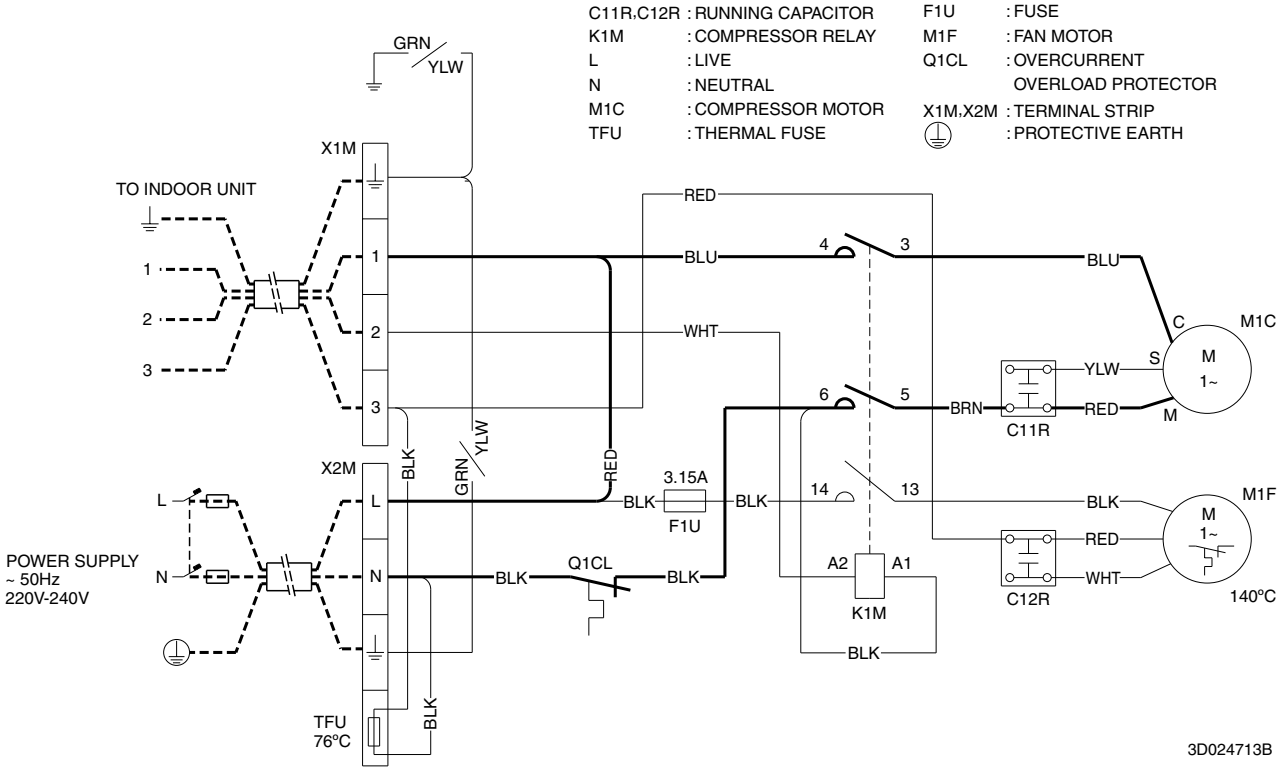
FTY25CVMA / FTY35CVMA



3D038710B

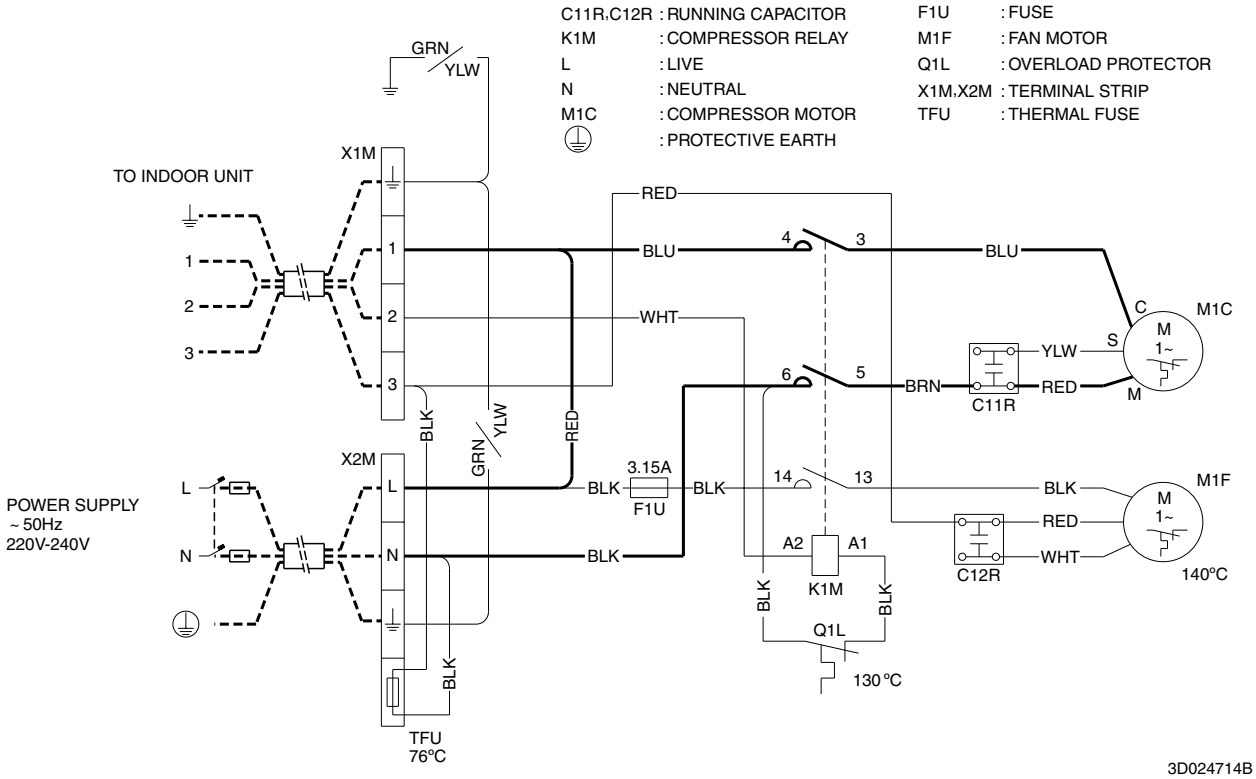
2.2 Outdoor Units

R25CV1A

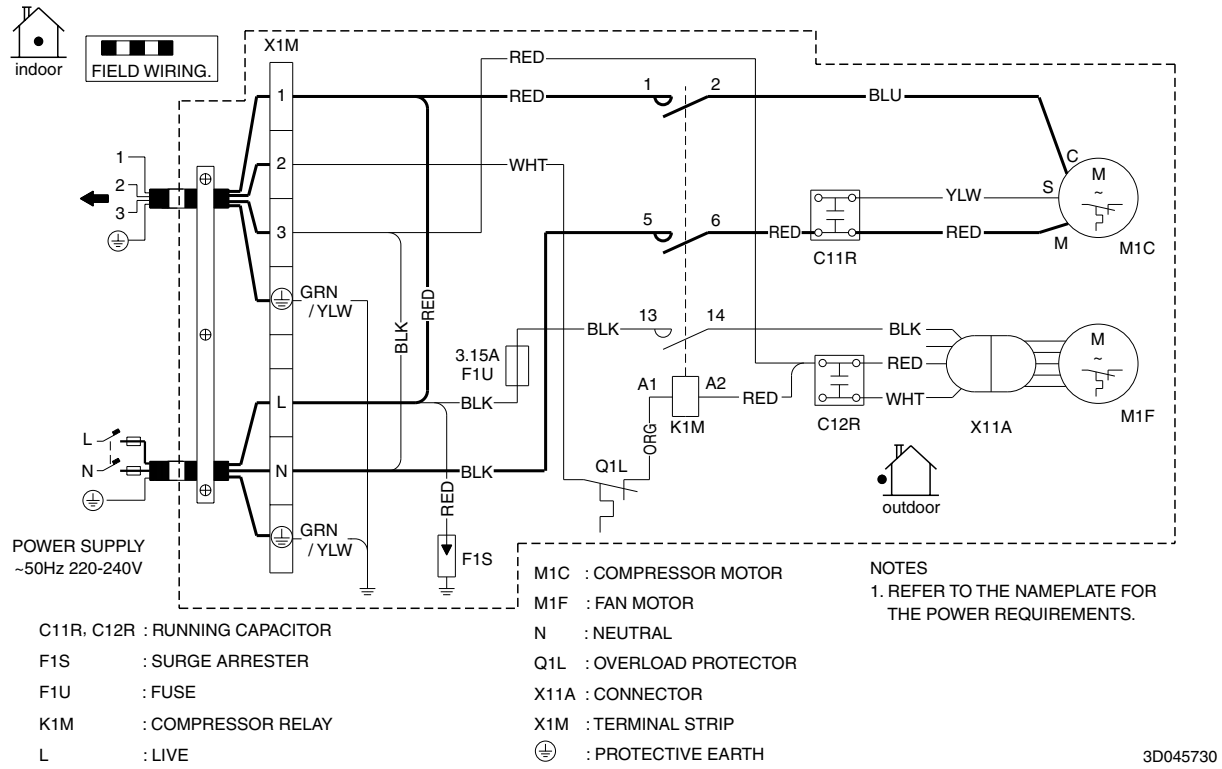


3D024713B

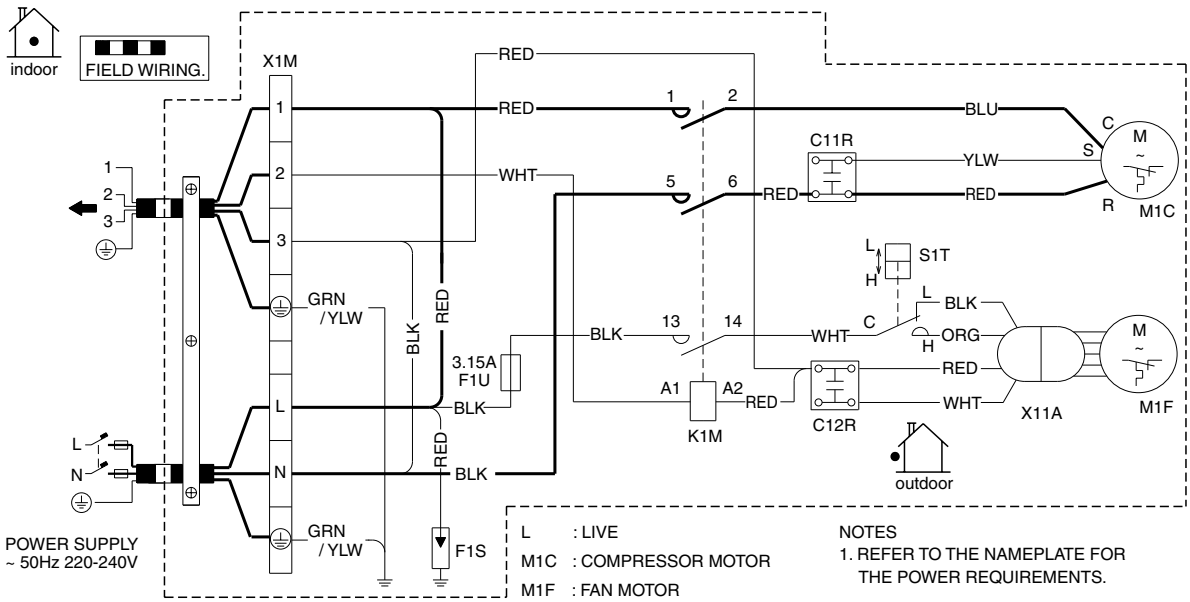
R35CV1A



R50CV1A



R60CV1A



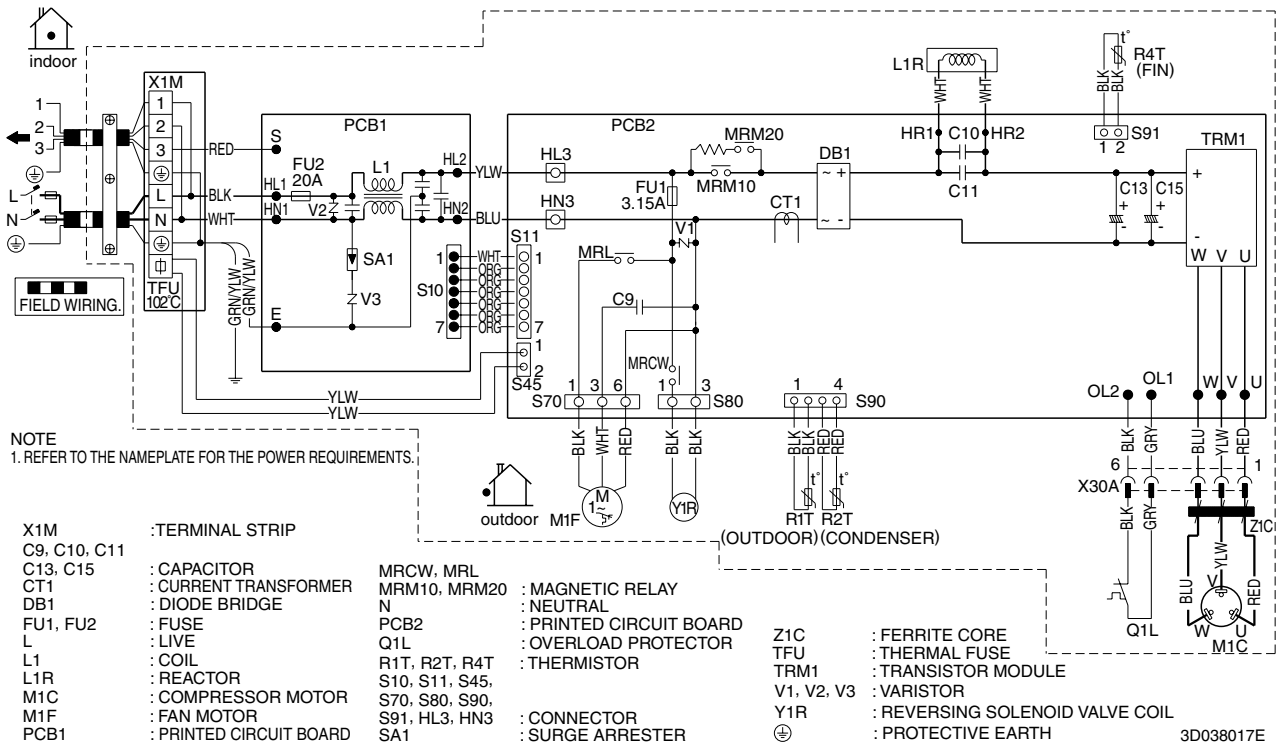
C11R, C12R	: RUNNING CAPACITOR
F1S	: SURGE ARRESTER
F1U	: FUSE
K1M	: COMPRESSOR RELAY

L	: LIVE
M1C	: COMPRESSOR MOTOR
M1F	: FAN MOTOR
N	: NEUTRAL
S1T	: THERMOSTAT
X11A	: CONNECTOR
X1M	: TERMINAL STRIP
⏚	: PROTECTIVE EARTH

NOTES
1. REFER TO THE NAMEPLATE FOR THE POWER REQUIREMENTS.

3D045733

RY25CVMA / RY35CVMA



NOTE
1. REFER TO THE NAMEPLATE FOR THE POWER REQUIREMENTS.

X1M	:TERMINAL STRIP
C9, C10, C11	
C13, C15	: CAPACITOR
CT1	: CURRENT TRANSFORMER
DB1	: DIODE BRIDGE
FU1, FU2	: FUSE
L	: LIVE
L1	: COIL
L1R	: REACTOR
M1C	: COMPRESSOR MOTOR
M1F	: FAN MOTOR
PCB1	: PRINTED CIRCUIT BOARD

MRCW, MRL	
MRM10, MRM20	: MAGNETIC RELAY
N	: NEUTRAL
PCB2	: PRINTED CIRCUIT BOARD
Q1L	: OVERLOAD PROTECTOR
R1T, R2T, R4T	: THERMISTOR
S10, S11, S45, S70, S80, S90, S91, HL3, HN3	: CONNECTOR
SA1	: SURGE ARRESTER

Z1C	: FERRITE CORE
TFU	: THERMAL FUSE
TRM1	: TRANSISTOR MODULE
V1, V2, V3	: VARISTOR
Y1R	: REVERSING SOLENOID VALVE COIL
⏚	: PROTECTIVE EARTH

3D038017E

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